
PowerSHAPE 2016 R1

Tutorials Manual

Designing a mold base



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Patent Information

Emboss functionality is subject to patent number GB 2389764 and patent applications US 10/174524 and GB 2410351.

Morphing functionality is subject to patent application GB 2401213.

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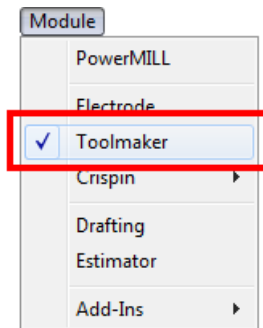
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Designing a mold base

Splitting a model

1. Use the Mold Die Wizard

- 1 Click **Module** from the **Main** menu.
- 2 Make sure ✓ is displayed next to **Toolmaker**.

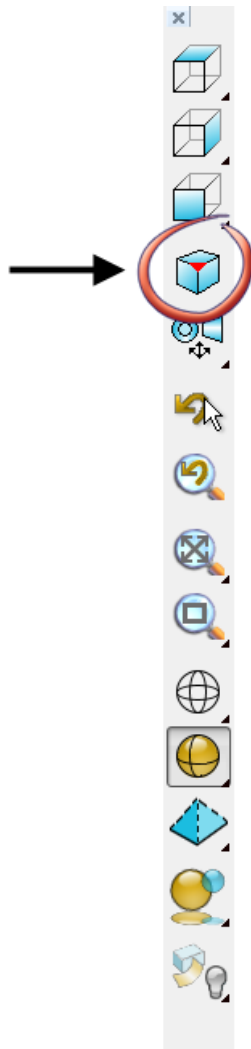


If ✓ is not displayed, click on **Toolmaker** to activate the module.

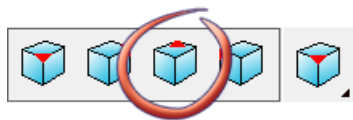
- 3 Click **Import Data (Moldbase.psmodel)**.

[View the AVI](#)
[Import Data](#) ←
[Step by step instructions](#)

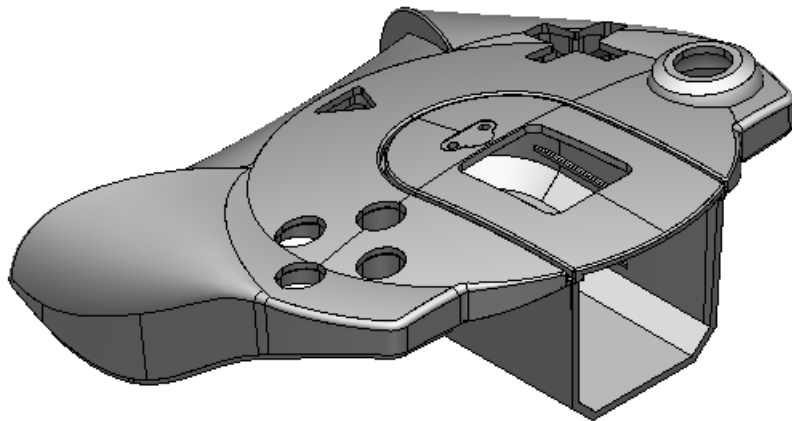
- 4 Click **View ISO1** using the right mouse button .



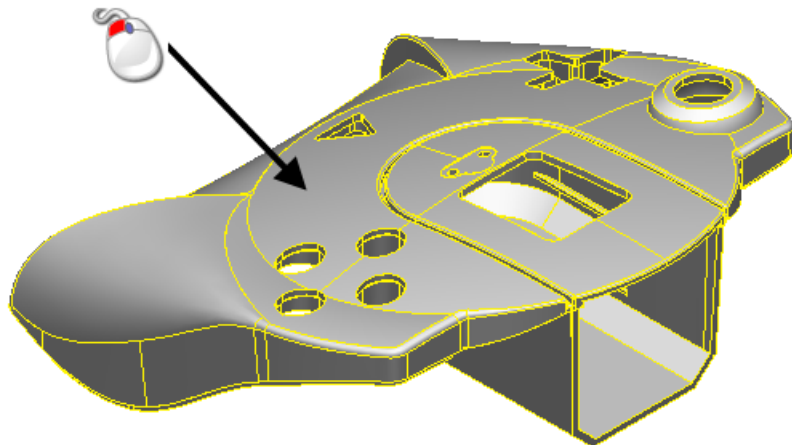
- 5 From the flyout, click **View ISO3** .



The model shown below is displayed in the graphics window.



- 6 Click on the model to select it.



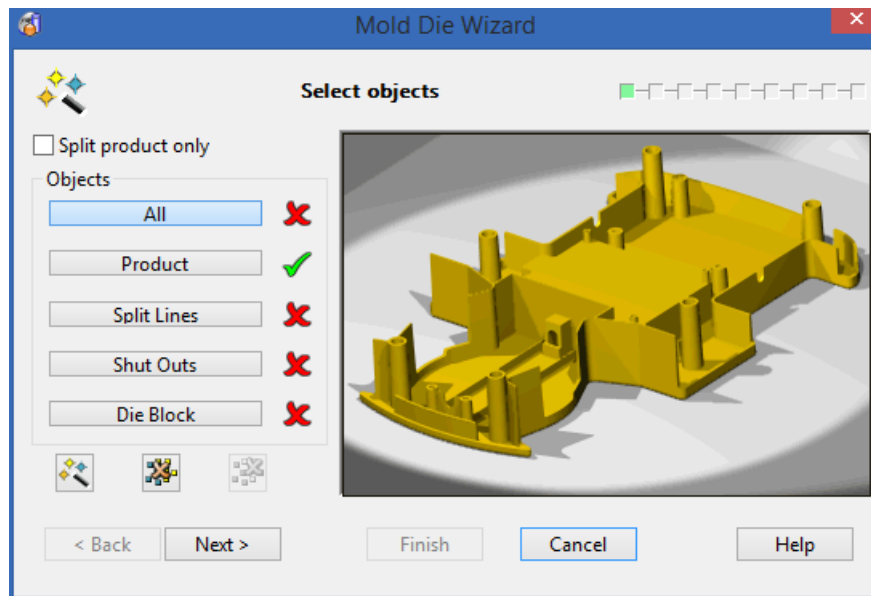
- 7 Click **Wizards** .



- 8 Click **Start Mold Die Wizard** .

- 9 The **Mold Die Wizard** dialog is displayed.

✓ is displayed next to **Product** to show the model is selected.

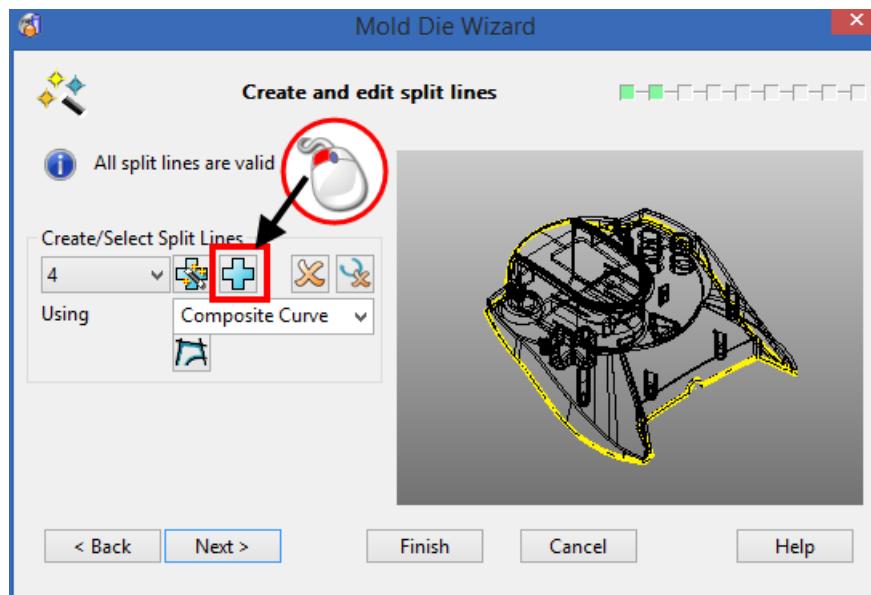


10 Click **Next**.

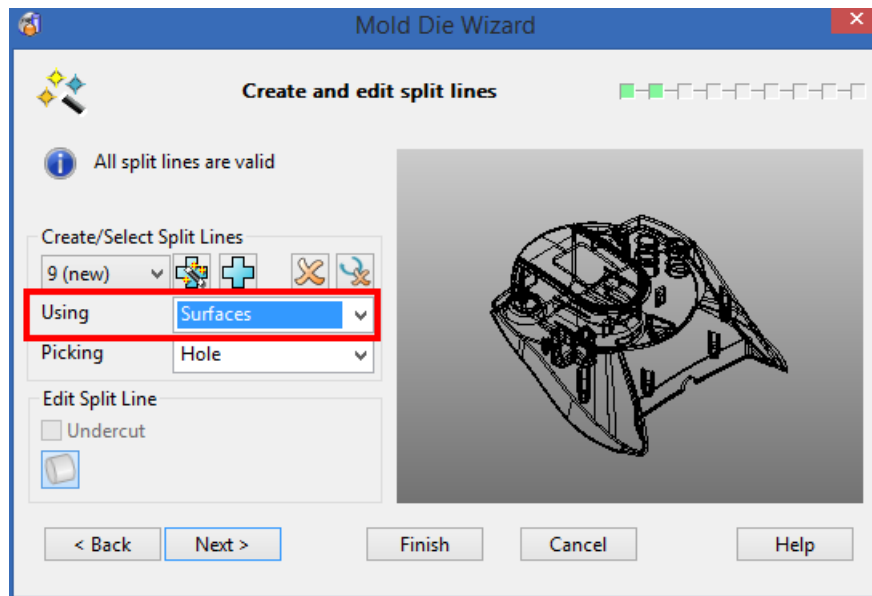


You can create curves and surfaces around holes that need to have shut off surfaces added into them so that the model splits successfully.

11 Click **Add split line/surface selection** .

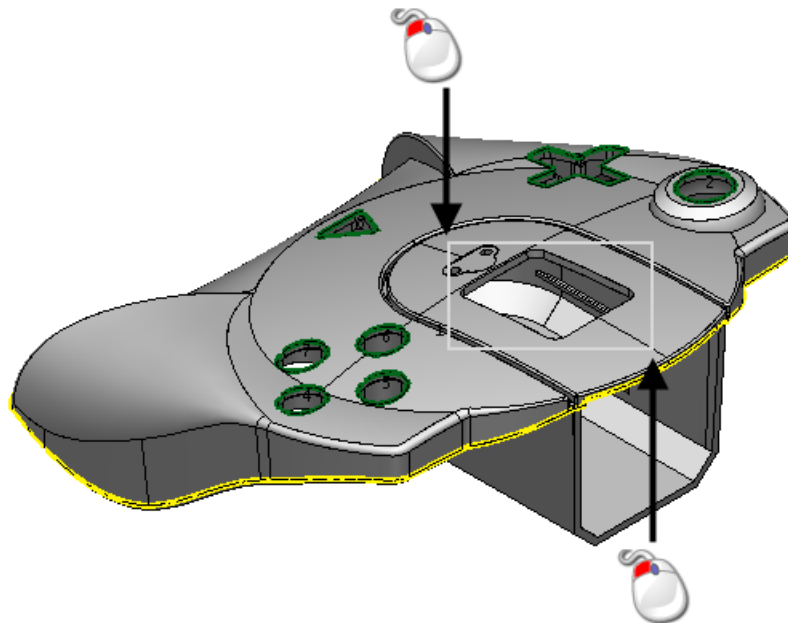


12 Select **Surfaces** from the **Using** list.

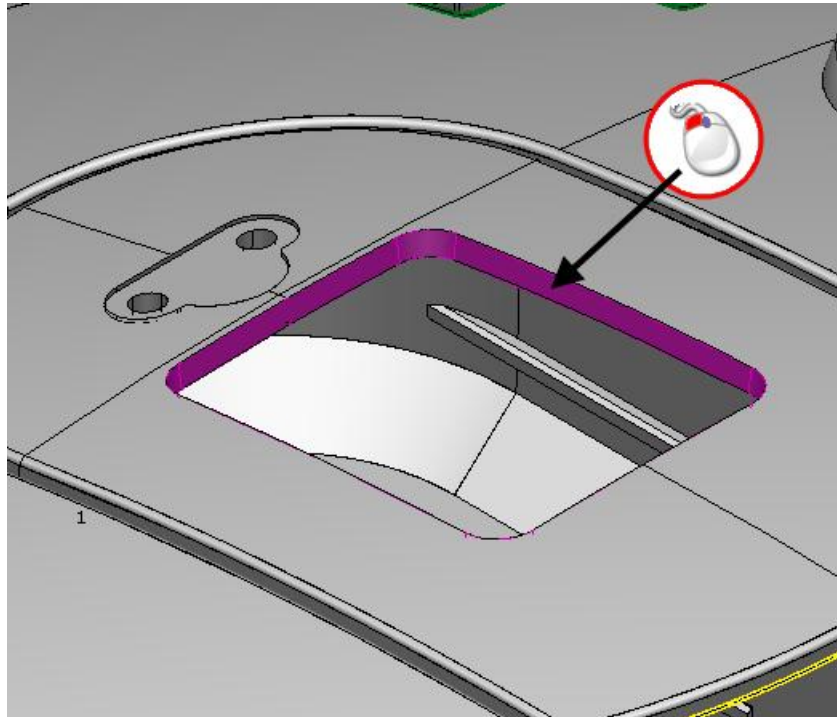


13 Click **Zoom to box Mode** .

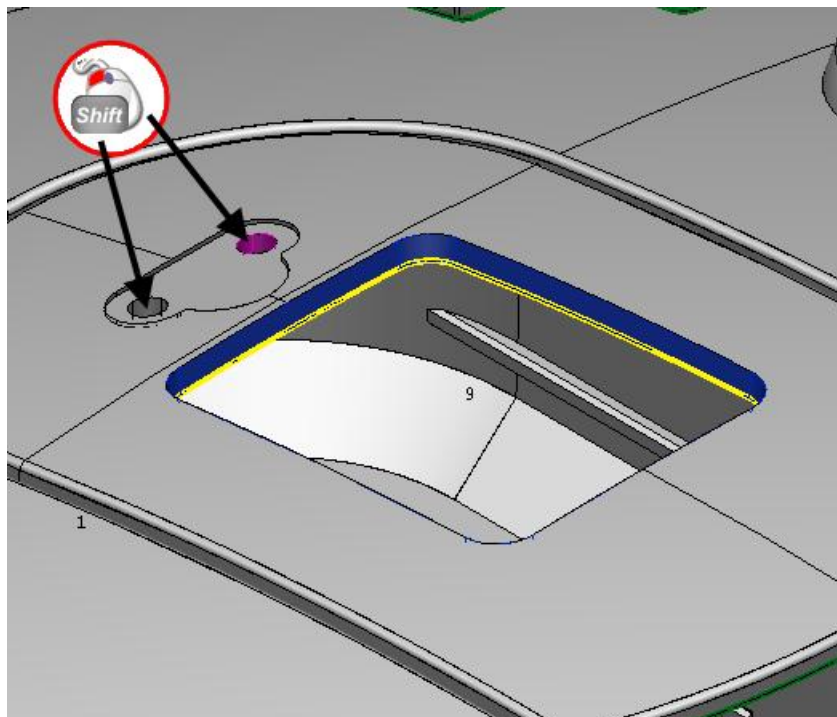
14 Click the left mouse button and drag a box, as shown:



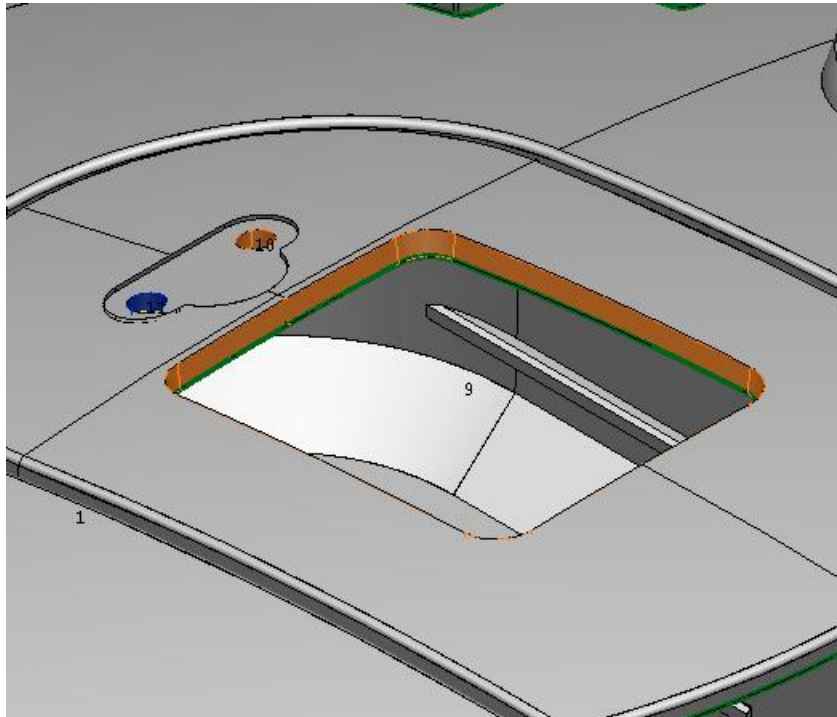
15 Click the face shown below:



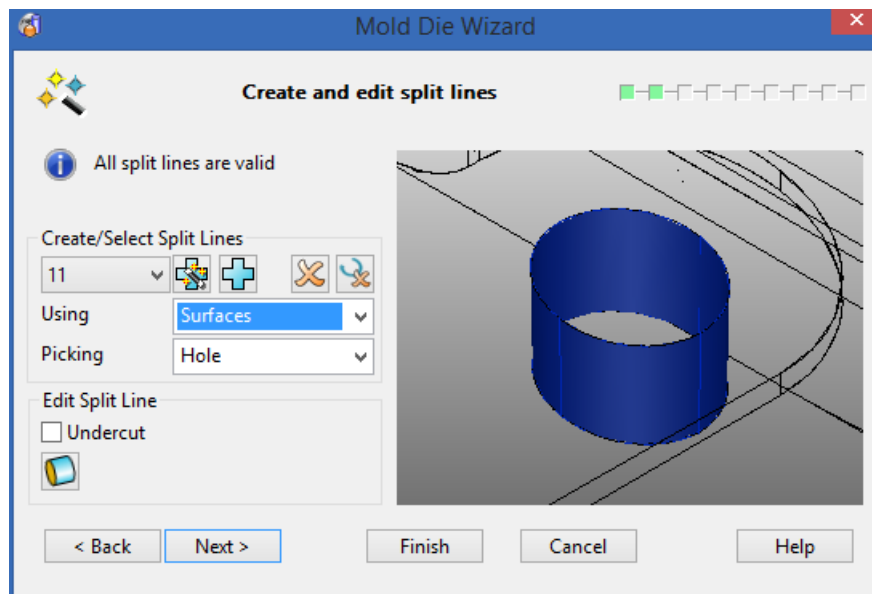
16 Hold down the **Shift** key and click the two faces shown below:



Your model should look like the one shown below:



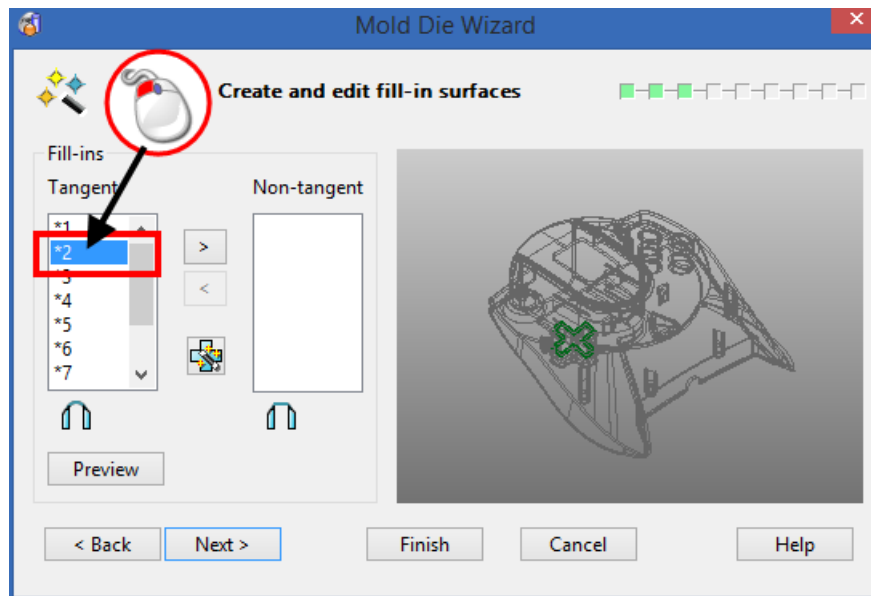
Three new split lines are created and the dialog shown below is displayed.



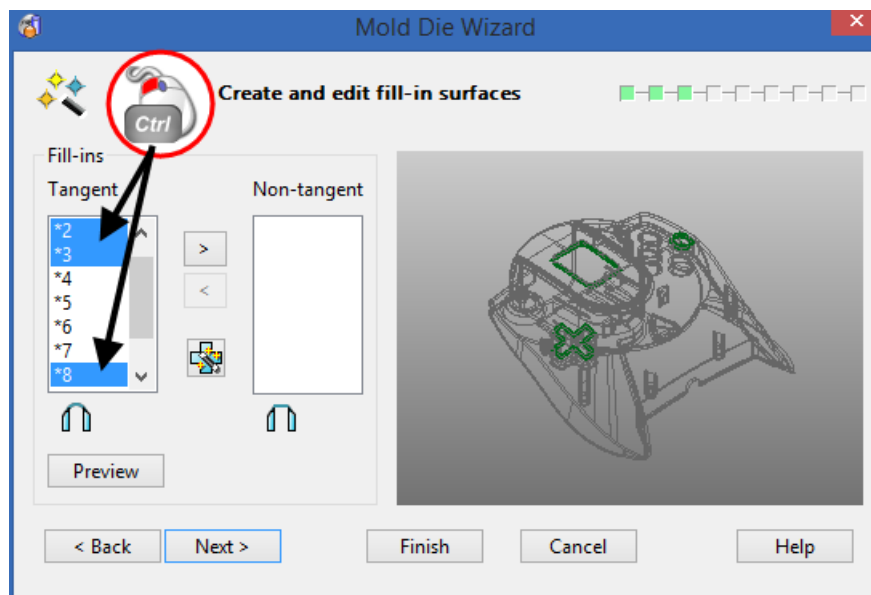
17 Click **Next**.

This page of the wizard allows the shut off surfaces to be edited to create the best surface.

18 Select curve 2 from the **Tangent** list.

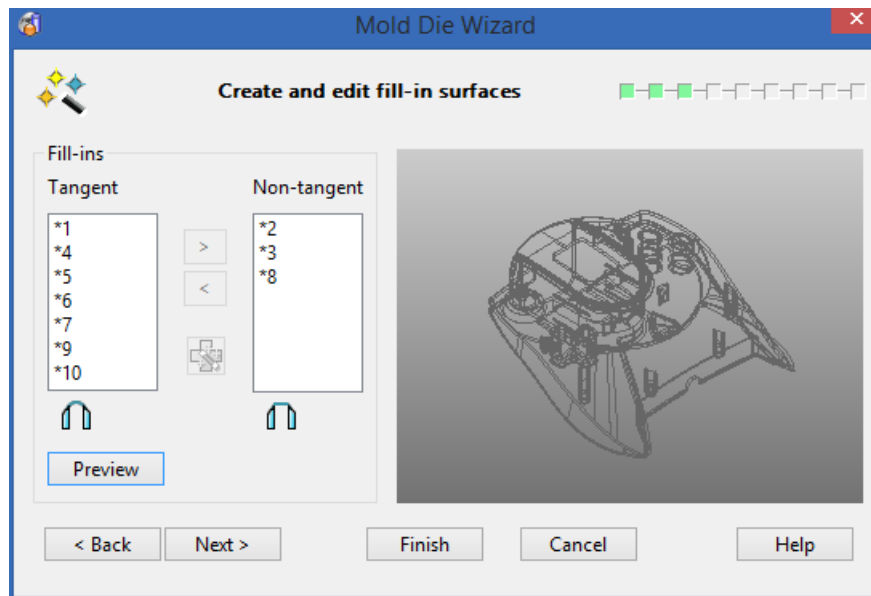


19 Hold down the **Control** key and select curves 3 and 8.



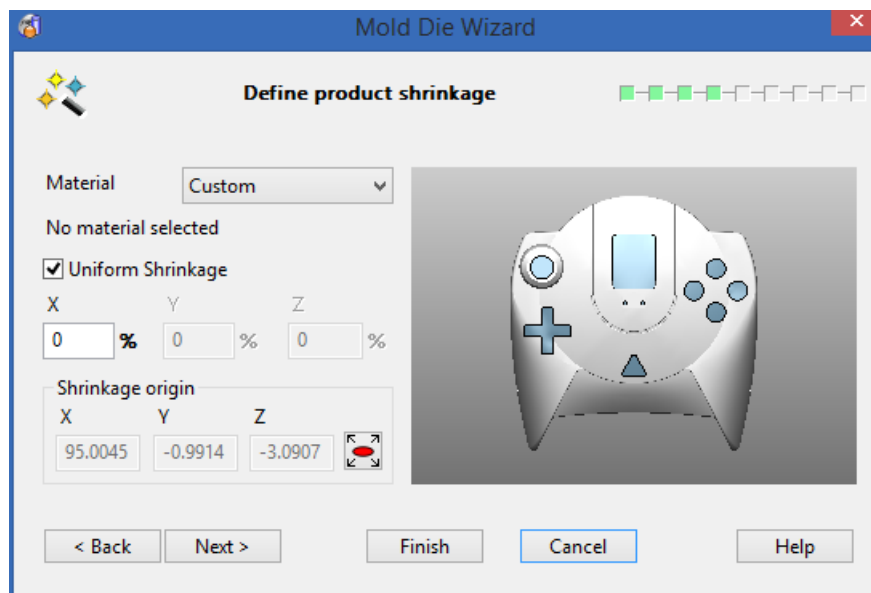
20 Click **Make the selected fill-in(s) non-tangent** .

This makes the curves non-tangent.



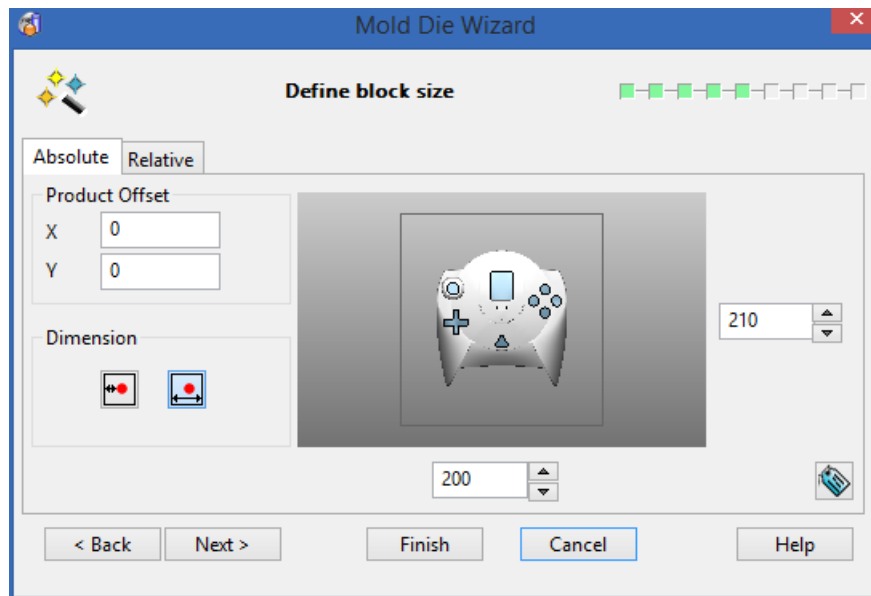
21 Click **Next**.

This page is where you can add an offset to the cavity and core to allow for shrinkage.

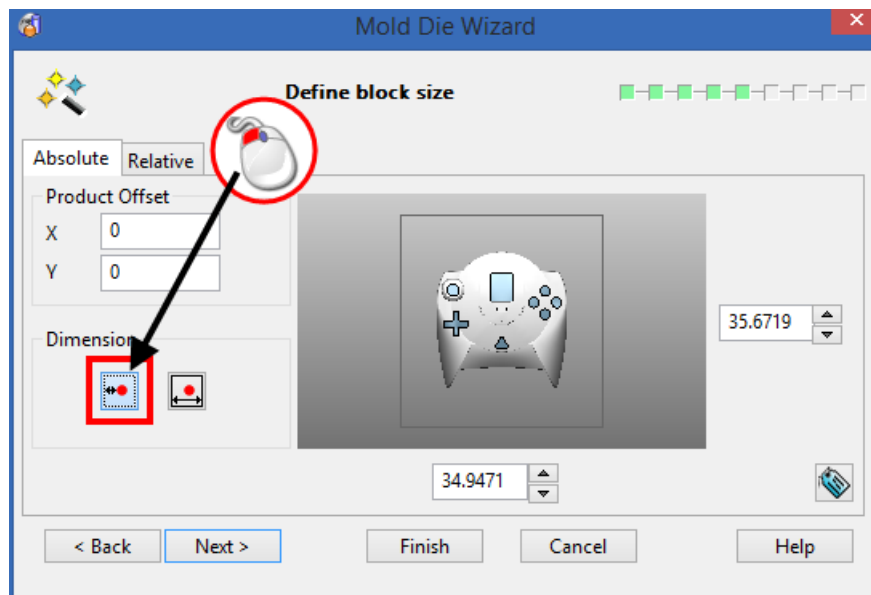


22 Click **Next**.

This page of the wizard is where you define the length and width of the cavity and core blocks.



23 Click the **Set minimum land dimensions**  button.

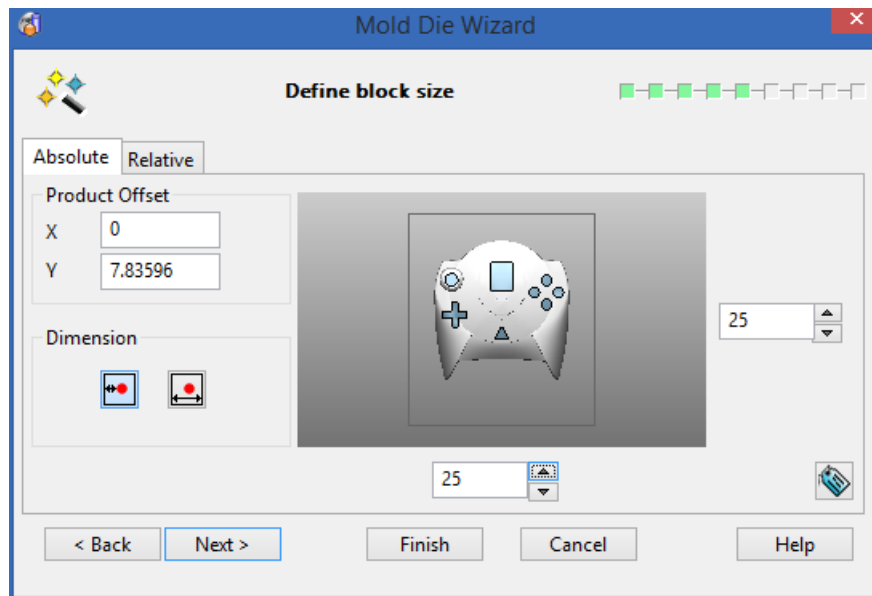


24 Set the **Product Offset Y** to 5.

25 Set the **Block Width** to 25.

26 Set the **Block Length** to 25.

The values are associated to each other so the block size is now displayed as shown in the wizard.

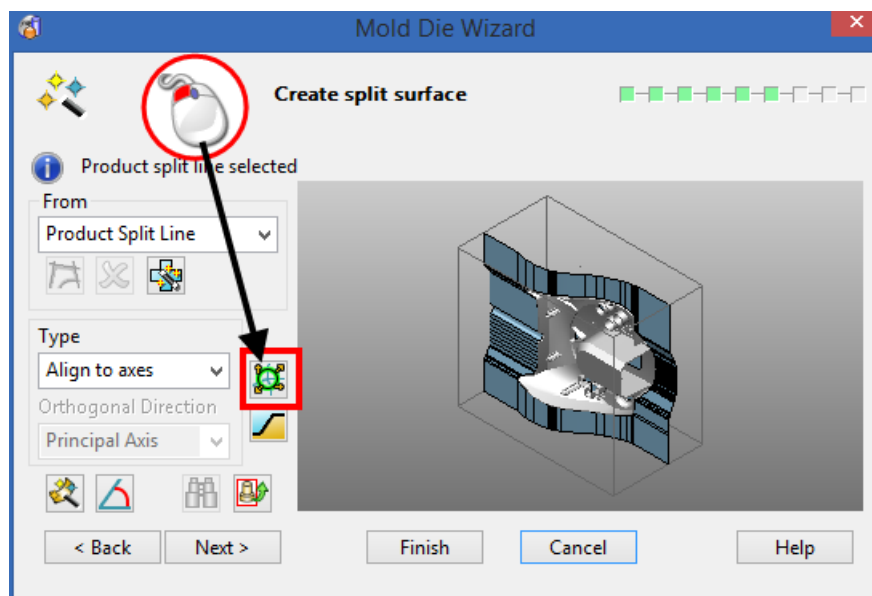


27 Click **Next**.

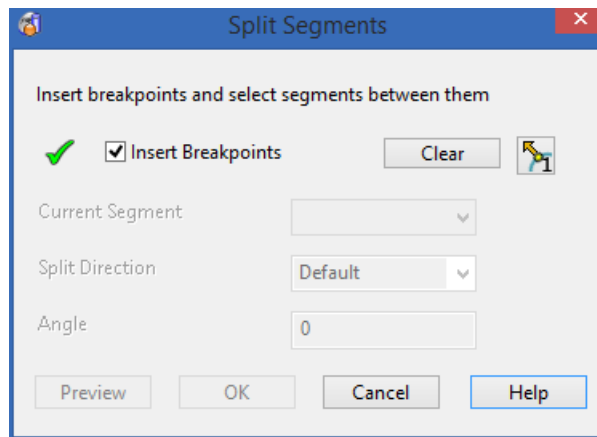
You can edit and refine the construction of the split surface between the cavity and core on this page.

28 Click **Advanced split surface options** .

The **Advanced split surface** options allow the removal of creases in the split surface.

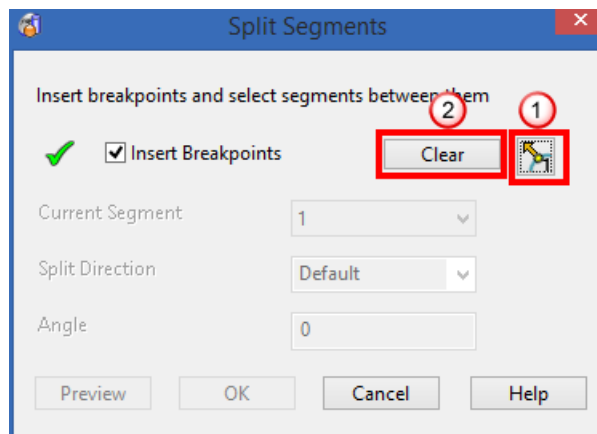


The **Split Segments** dialog is displayed.

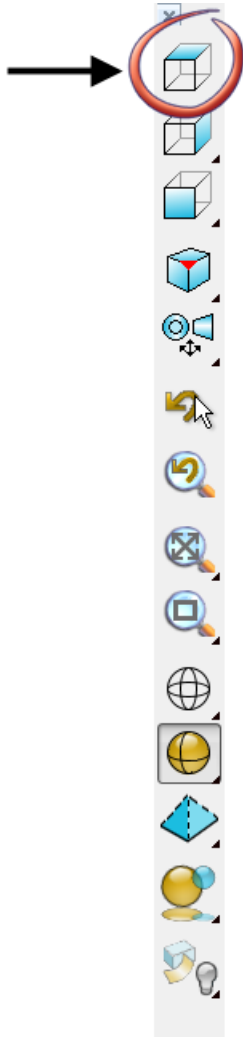


29 Do the following:

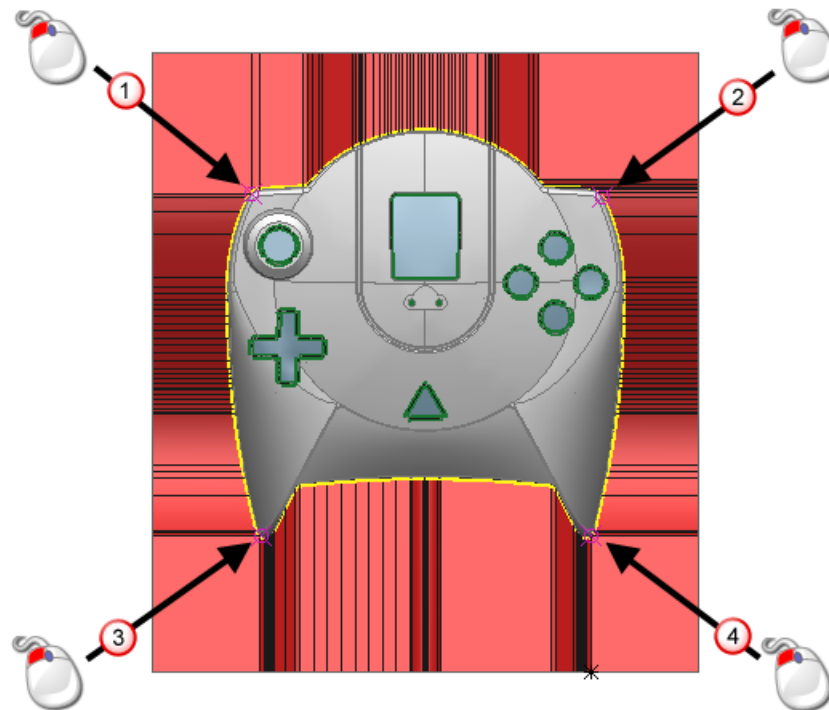
- ① Click **Go both directions?** .
- ② Click **Clear**.



30 Click **View from Top** .



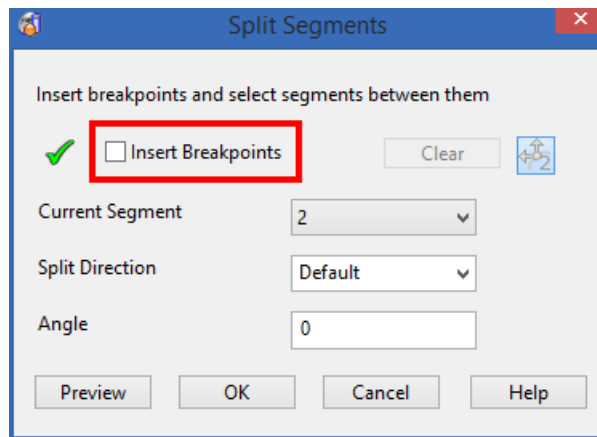
31 Click the 4 break points at the positions shown below



32 Your model should look like the one shown below:

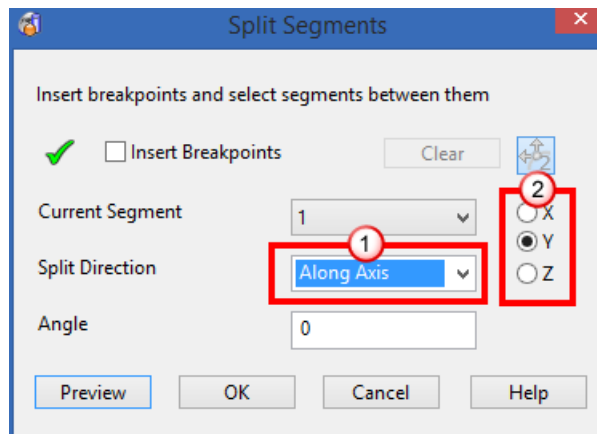


33 Click the **Insert Breakpoints** option to *deselect* it.



34 Do the following:

- ① Select **Along Axis** from the **Split Direction** option.
- ② Select **Y** as the direction.



This points the direction arrow of the split surface away from the model as shown in the image below:



35 Repeat for **Current Segments 2, 3, and 4**.



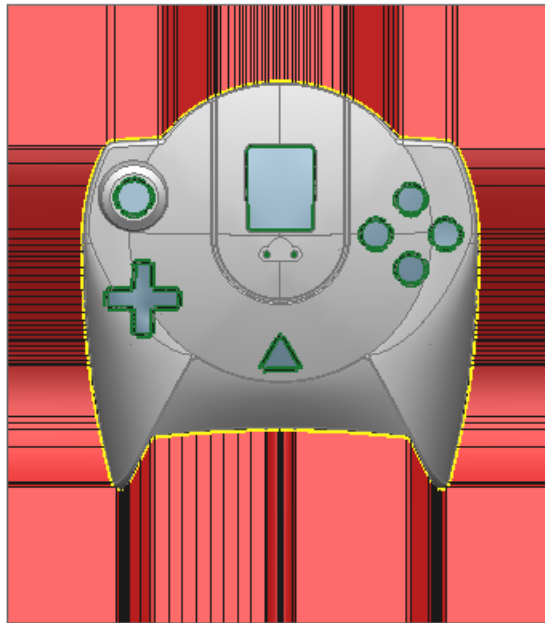
Always ensure the arrow points away from the model.



*The **Along Axis** direction is either x or y.*

36 Click **OK**.

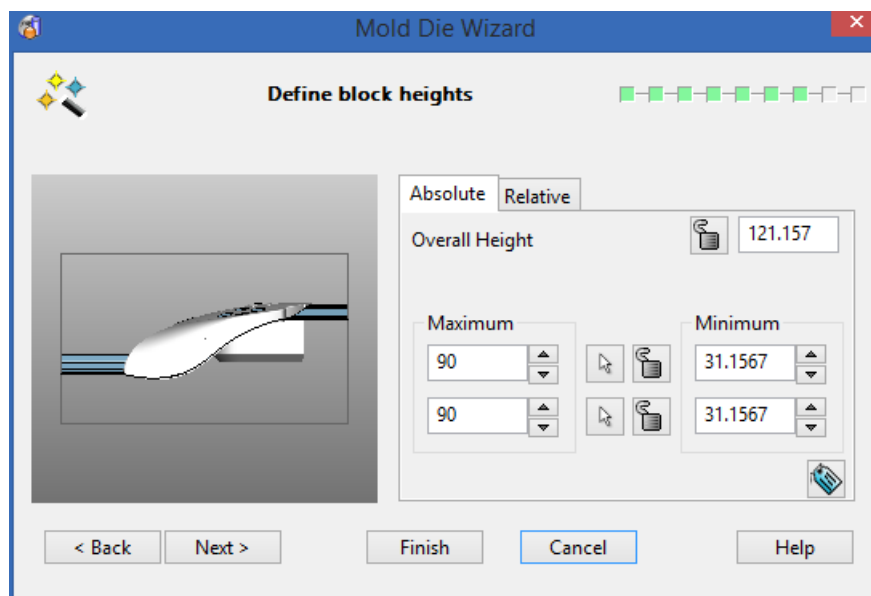
Your model should look like the one shown below:



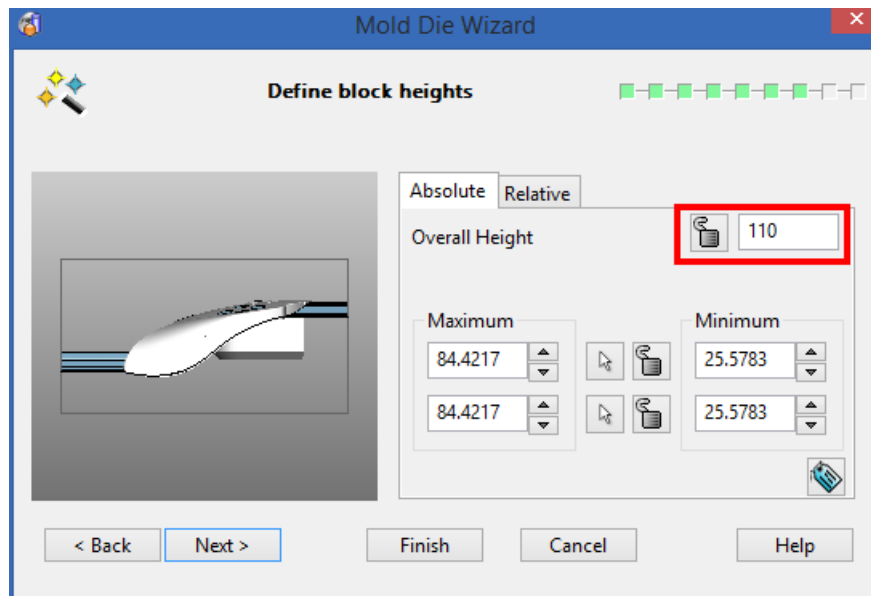
37 Click **Next**.



This page of the wizard is where you define the height of the cavity and core blocks.



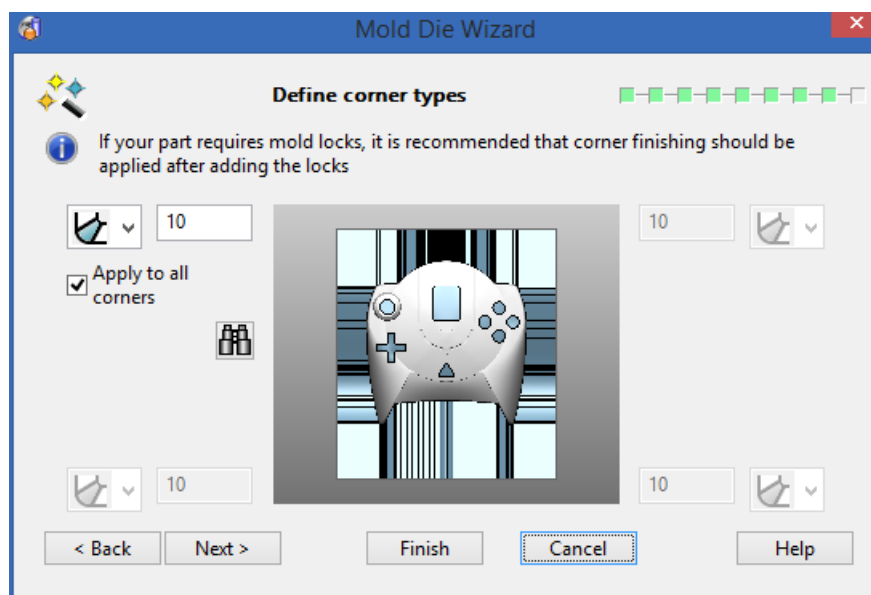
38 Enter an **Overall height** of **110**.



39 Click **Next**.

 *On this page of the wizard, you can specify the corners of the blocks to have one of the following options:*

- *fillets*
- *chamfers*
- *nothing*
- *define each corner individually*



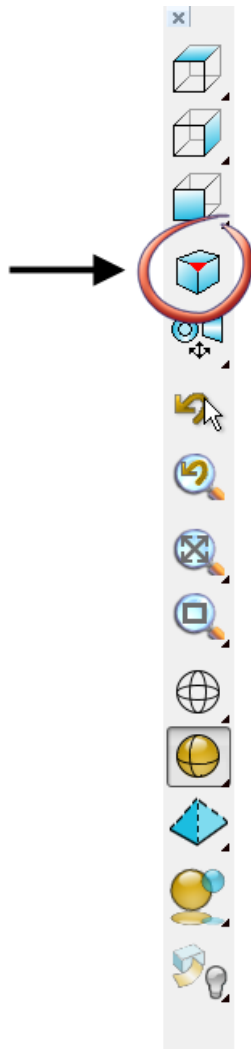
40 Click **Next**.



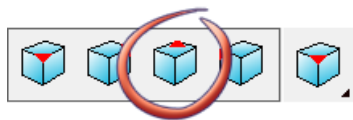
Before the cavity and core blocks are finally calculated, the simulation will split them apart so the blocks can be visualized and checked for changes.



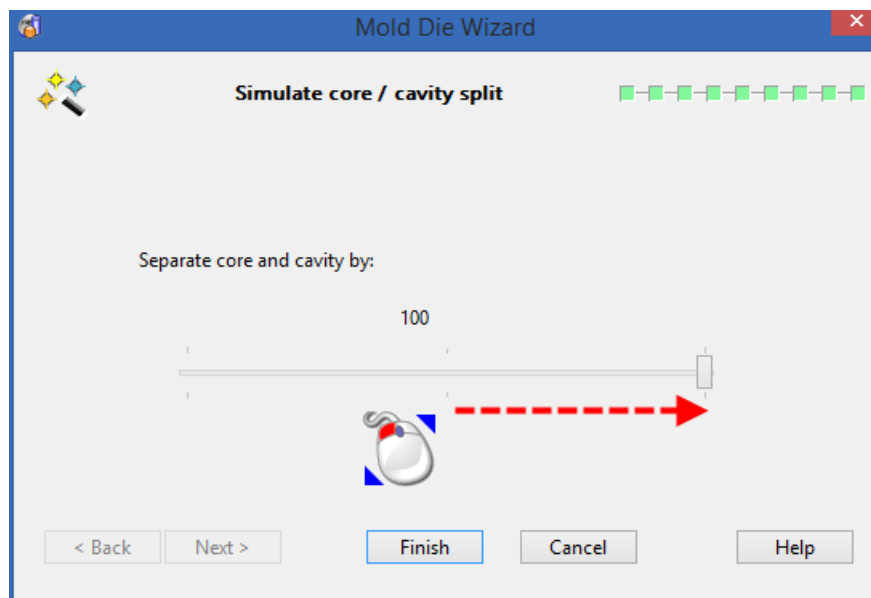
41 Click **View ISO1** using the right mouse button .



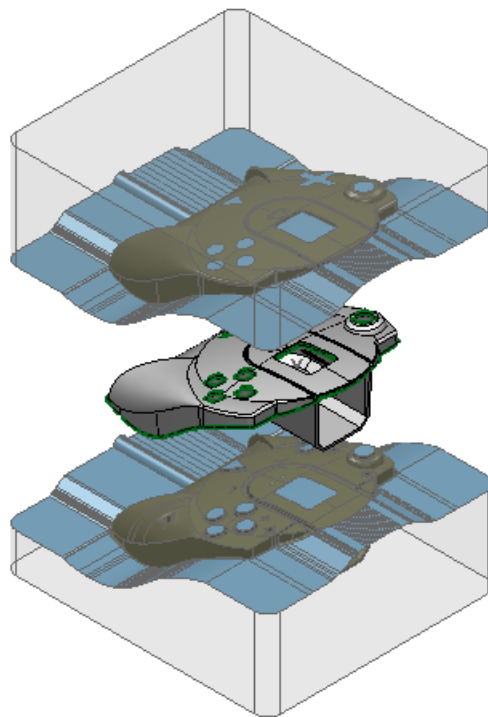
42 From the flyout, click **View ISO3** .



43 Drag the **Separate core and cavity by:** slider to **100**.

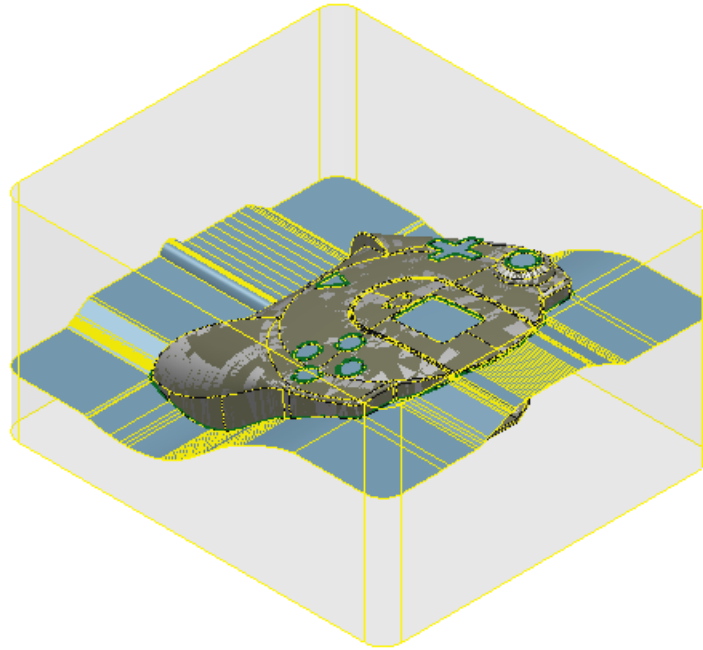


The cavity and core are shown separated.



44 Click **Finish**.

The model has been taken and the split line found automatically.
From this the cavity and core blocks have been created.



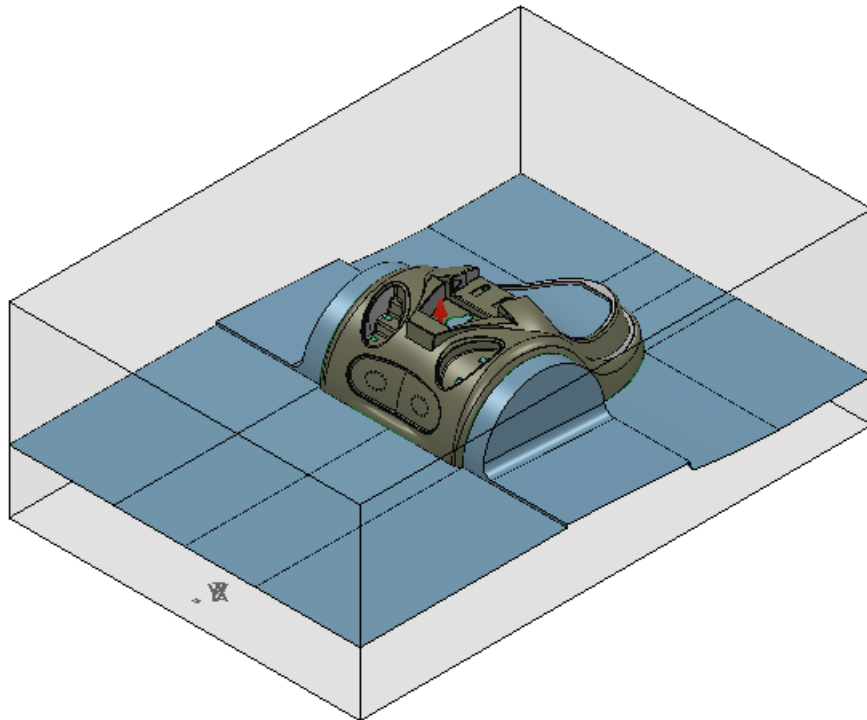
Creating a mold base

2. Use the Cavity Core Wizard

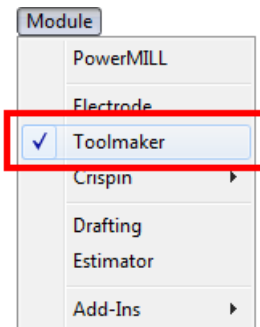
- 1 Click **Import Data (Moldbase_2.psmodel)**.

[View the AVI](#)
[Import Data](#) ←
[Step by step instructions](#)

The model shown below is displayed in the graphics window.



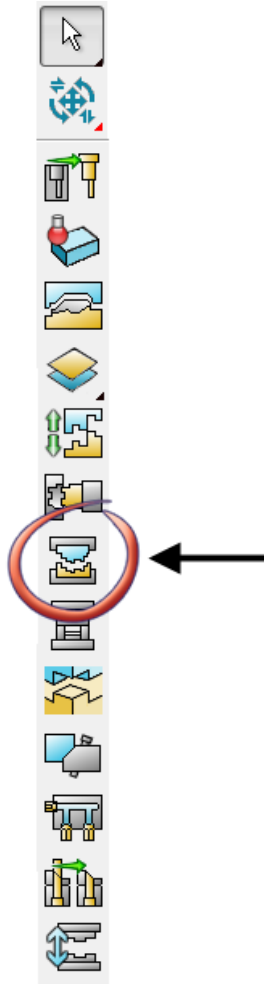
- 2 Click **Module** from the **Main** menu.
- 3 Make sure ✓ is displayed next to **Toolmaker**.



If ✓ is not displayed, click on **Toolmaker** to activate the module.

- 4 Click **Wizards** .

5 Click **Start Cavity Core Wizard**



The **Cavity Core Wizard** is displayed in the browser window.

- 6 Select the **Non-inserted core/cavity plates** option.

Cavity-Core Wizard

☐ Non-inserted core/cavity plates.

☒ Inserted core/cavity plates with inserts

Creating Inserts

Run Mold Die Wizard...

No insert defined yet!

Run Mold Die Wizard or register inserts.

Register Inserts

Register

☐ Display the names of the selected items.

☒ Select workplane

☐ Select cavity solid

☐ Select core solid

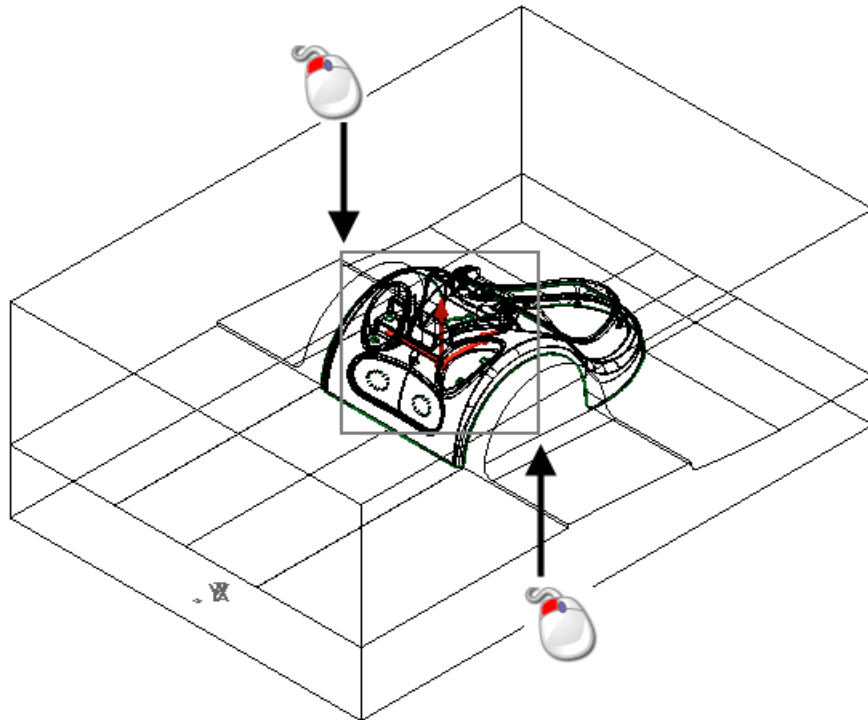
< Back Next > Cancel Help

- 7 Click **Wireframe View** .

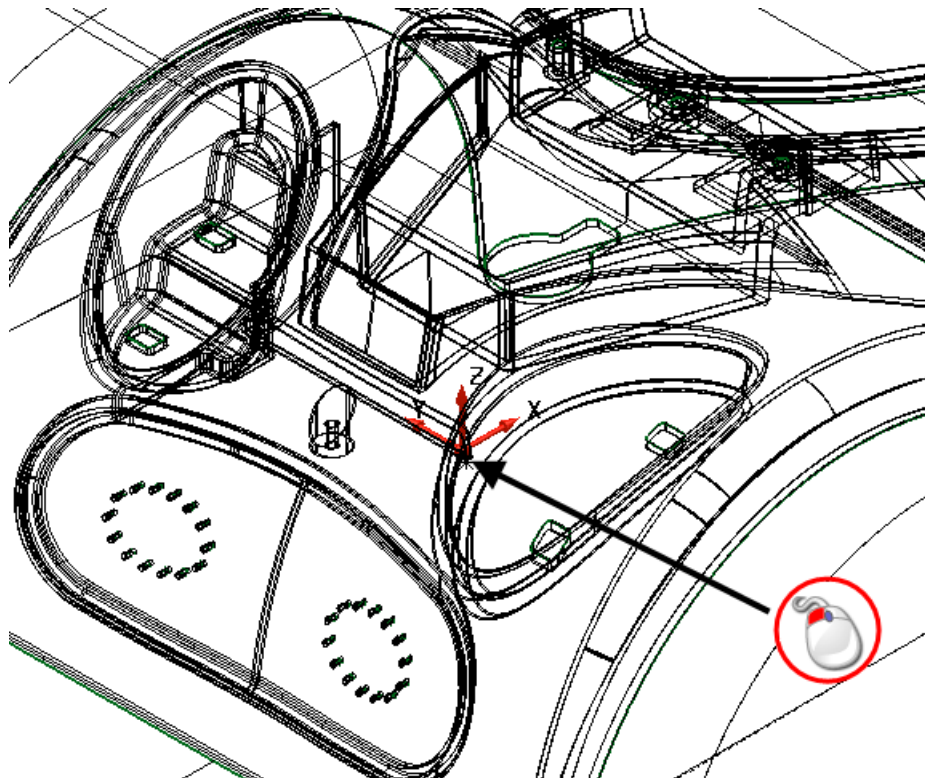
The cavity and core plates need to be registered.

- 8 Click **Zoom to box Mode** .

Click the left mouse button and drag a box, as shown:



- 9 Click the workplane shown in the image below.



✓ is displayed next to **Select workplane**.

Cavity-Core Wizard

☒ Non-inserted core/cavity plates.
☐ Inserted core/cavity plates with inserts

No plates defined yet!
Register plates
or
Press 'Next' to pick a catalogue then run Die Wizard.

Register Plates

☐ Display the names of the selected items.

☒ Select workplane	✓
☐ Select cavity solid	✗
☐ Select core solid	✗

10 Click **Resize to Fit** .



11 Select **Select cavity solid.**

Cavity-Core Wizard

☒ Non-inserted core/cavity plates.
☐ Inserted core/cavity plates with inserts

No plates defined yet!
Register plates
or
Press 'Next' to pick a catalogue then run Die Wizard.

Register Plates

Register

☐ Display the names of the selected items.

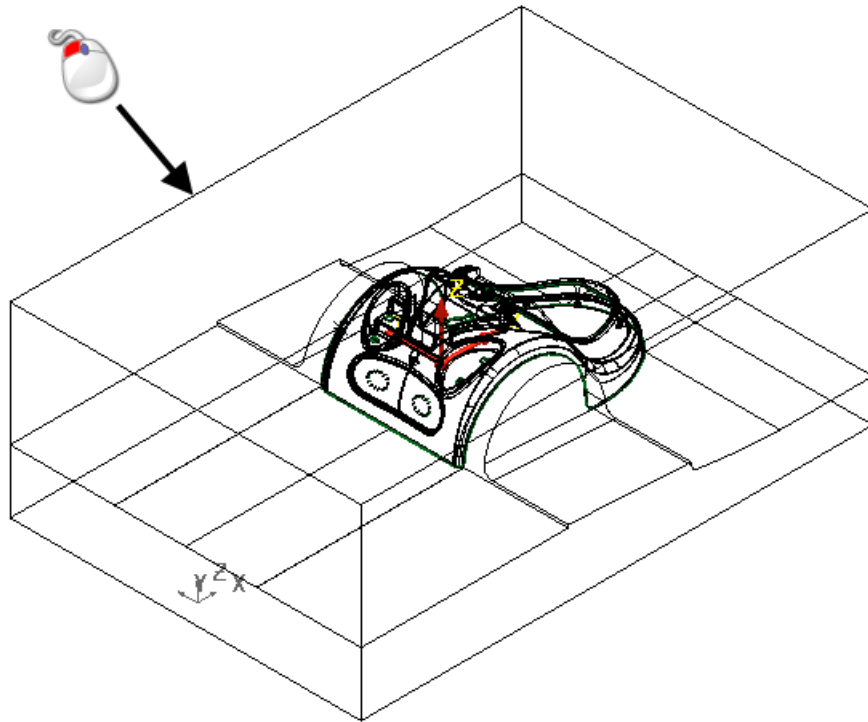
☒ Select workplane ✓

☐ Select cavity solid ✗

☐ Select core solid ✗

< Back Next > Cancel Help

12 Click the cavity shown in the image below:



✓ is displayed next to **Select cavity solid**.

Cavity-Core Wizard

☒ Non-inserted core/cavity plates.
☐ Inserted core/cavity plates with inserts

No plates defined yet!
Register plates
or
Press 'Next' to pick a catalogue then run Die Wizard.

Register Plates

Register

☐ Display the names of the selected items.

☐ Select workplane ✓

☒ **Select cavity solid** ✓

☐ Select core solid ✗

< Back Next > Cancel Help

13 Click **Select core solid**.

Cavity-Core Wizard

☒ Non-inserted core/cavity plates.
☐ Inserted core/cavity plates with inserts

No plates defined yet!
Register plates
or
Press 'Next' to pick a catalogue then run Die Wizard.

Register Plates

Register

☐ Display the names of the selected items.

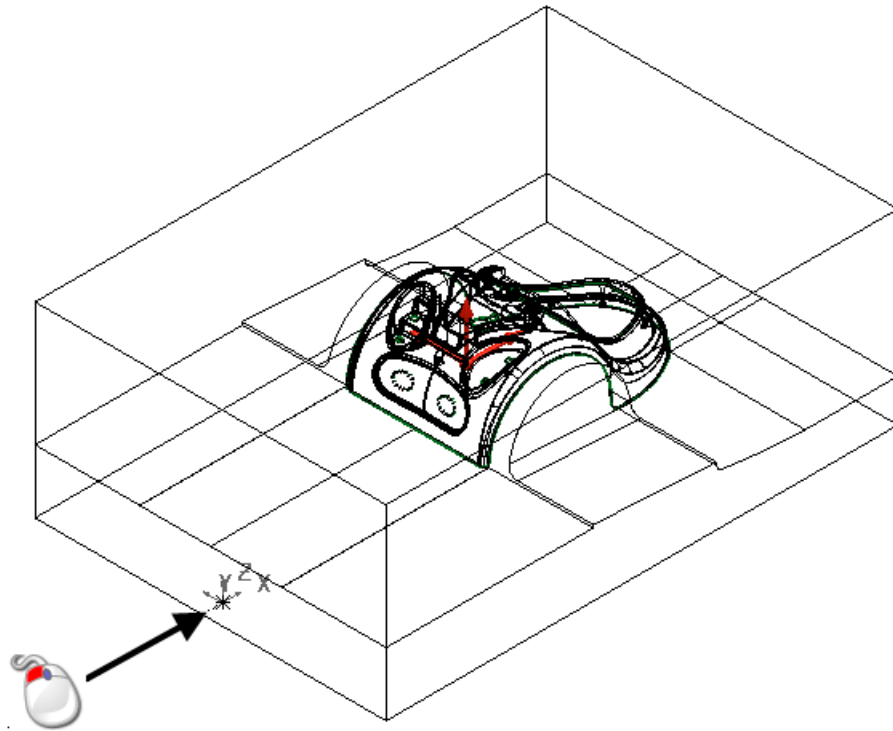
☐ Select workplane ✓

☒ Select cavity solid ✓

☐ Select core solid ✗

< Back Next > Cancel Help

14 Click the core shown in the image below:



✓ is displayed next to **Select core solid**.

Cavity-Core Wizard

☒ Non-inserted core/cavity plates.
☐ Inserted core/cavity plates with inserts

No plates defined yet!
Register plates
or
Press 'Next' to pick a catalogue then run Die Wizard.

Register Plates

Register

☐ Display the names of the selected items.

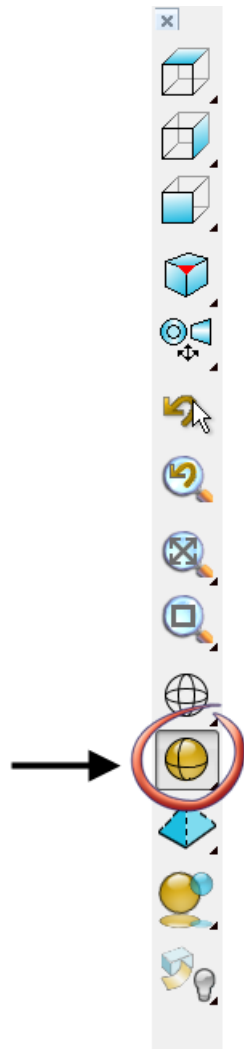
☐ Select workplane ✓

☐ Select cavity solid ✓

☒ Select core solid ✓

< Back Next > Cancel Help

15 Click **Shaded and Wireframe view** .



16 Click Register.

The screenshot shows the 'Cavity-Core Wizard' dialog box. At the top, there's a title bar 'Cavity-Core Wizard'. Below it, two radio buttons are present: 'Non-inserted core/cavity plates.' (selected) and 'Inserted core/cavity plates with inserts'. A message states 'No plates defined yet! Register plates or Press 'Next' to pick a catalogue then run Die Wizard.' Below this is a section titled 'Register Plates' containing a 'Register' button, which is highlighted with a red rectangle. Underneath, there are three options with checkboxes and green checkmarks: 'Display the names of the selected items.' (unchecked), 'Select workplane' (checked), 'Select cavity solid' (checked), and 'Select core solid' (checked). At the bottom, there are four buttons: '< Back', 'Next >', 'Cancel', and 'Help'.

The next page of the wizard is displayed.

The screenshot shows the 'Cavity-Core Wizard' dialog box at the next step. The title bar remains 'Cavity-Core Wizard'. The radio buttons are still present. Below them is a table with three columns: 'Cavity', 'Core', and 'Inserts'. Each column contains a yellow lightning bolt icon. A message states 'Pre-modelled plates have been found. Please press 'Next'...'. At the bottom, the same four buttons are present: '< Back', 'Next >', 'Cancel', and 'Help'.

17 Click Next.

The next page of the wizard is displayed.

Mold Base

Catalogue: <Choose a catalogue> ▼

Type: ▼

Guide pillars: ☒ Fixed half ☐ Moving half

[Show the mold base](#)

Fixed half Moving half

Cavity plate

Type: ▼

Material: ▼ Comments...

Core plate

Type: ▼

Material: ▼ Comments...

Levels...

< Back Next > Cancel Help

18 Do the following:

- ① Select **Hasco** from the **Catalog** drop down list.
- ② Change the **Material** for the **Cavity plate** to **1730**.

- ③ Change the **Material** for the **Core plate** to **1730**.

Mold Base

Catalogue ① HASCO ▼

Type Standard mold ▼

Guide pillars: ☒ Fixed half ☐ Moving half

[Show the mold base](#)

■ Fixed half ■ Moving half

Cavity plate

Type K20 ▼

Material ② 1730 ▼ Comments...

Core plate

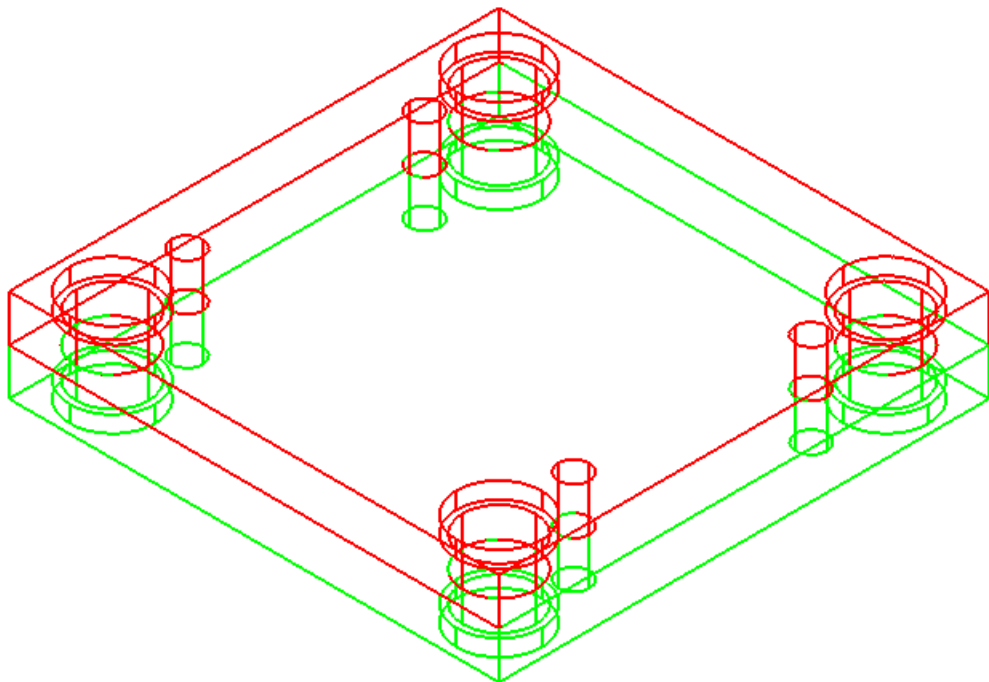
Type K20 ▼

Material ③ 1730 ▼ Comments...

Levels...

< Back Next > Cancel Help

The cavity and the core plate are displayed in the model window.



19 Click **Next**.



20 Click **Next**.

Dimensions

Mold base

Dimensions ☒ Standard ☐ Custom

546x796

Ejection system type Standard (1)

☒ Fixed half ☒ Moving half ☐ Ejection system

Rotate the mold base: ☐ ☐ ☐ ☐

Cavity plate

Thickness 226

Material 1730

Dimensions: Custom, mms

Product code: 546 796 226 1730

Dimensions...

Core plate

Thickness 226

Material 1730

Dimensions: Custom, mms

Product code : 546 796 226 1730

Dimensions...

< Back Next > Cancel Help

21 Click Next.

Cavity-Core Wizard

You have successfully completed the Cavity/Core wizard

You specified the following parameters:

Mold base	
Catalogue	HASCO
Type	Standard mold
Guide pillars	Fixed half
Rotation angle	270
Width	546
Length	796
Dimensions	Standard

 Cavity plate	
Type	K20
Thickness	226
Material	1730
Dimensions	Custom

 Core plate	
Type	K20
Thickness	226
Material	1730
Dimensions	Custom

Press the "Finish" button to create the cavity and core plates.

☒ Run the Mold Base Wizard on exit

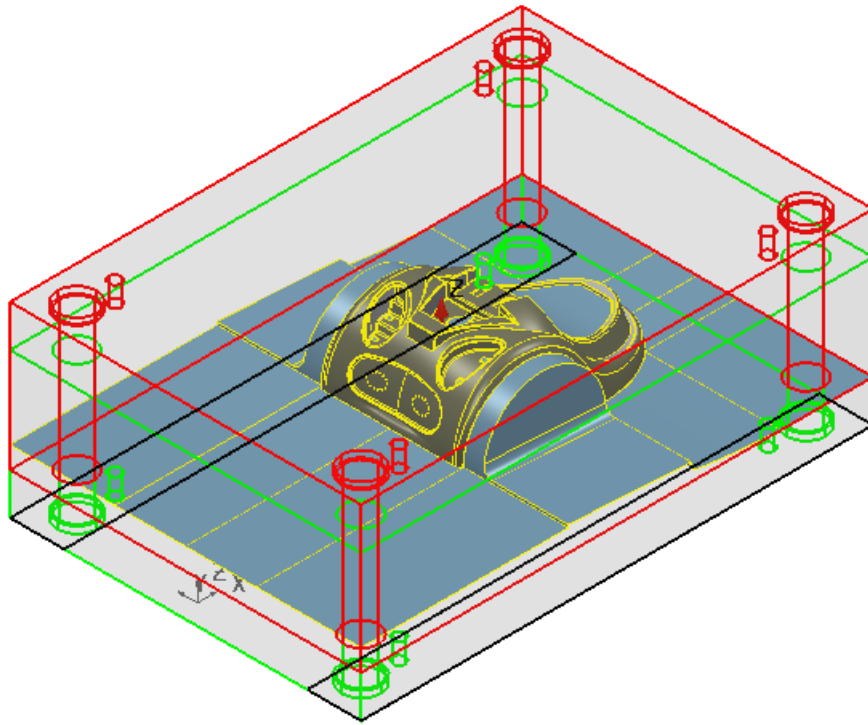
< Back

Finish

Cancel

Help

The plates are drawn with the model.



22 Click **Finish**.

This completes the **Cavity Core Wizard**.

The **Mold Base Wizard** starts.

Mold Base Wizard

Base catalogue: HASCO

Dimensions: ☒ Standard ☐ Custom
546x796

Base type: Standard mold

☒ Support plate
☒ Risers
☒ Ejection system

Guide pillars: ☒ Fixed half ☐ Moving half

[Show the mold base](#)

Rotate the mold base: ☐ ☐ ☐ ☐

Plates

- Top clamping plate
- Cavity plate
- Core plate
- Support plate
- Ejector plate
- Ejector base plate
- Risers
- Bottom clamping plate

Type: K11 (overhang in width)

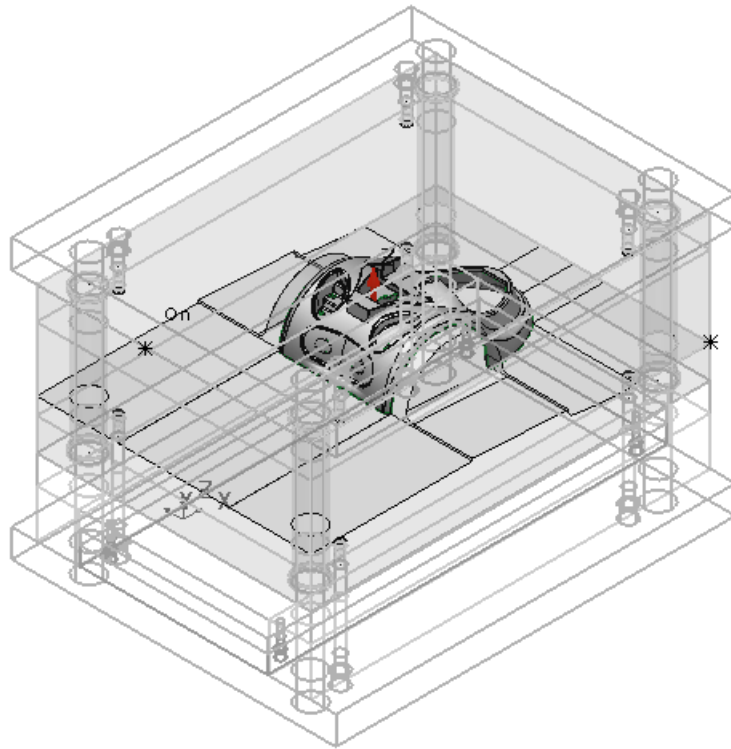
Thickness: 56

< Back Next > Cancel Help

The mold base is drawn in the model.



Your model should look like the one shown below:



24 Click **Support plate** to deselect it.

Mold Base Wizard

Base catalogue: HASCO

Dimensions: ☒ Standard ☐ Custom

546x796

Base type: Standard mold

☐ Support plate

☒ Risers

☒ Ejection system

Guide pillars: ☒ Fixed half ☐ Moving half

Show the mold base

Rotate the mold base: ☐ ☐ ☐ ☐

Plates

Top clamping plate

Cavity plate

Core plate

Ejector plate

Ejector base plate

Risers

Bottom clamping plate

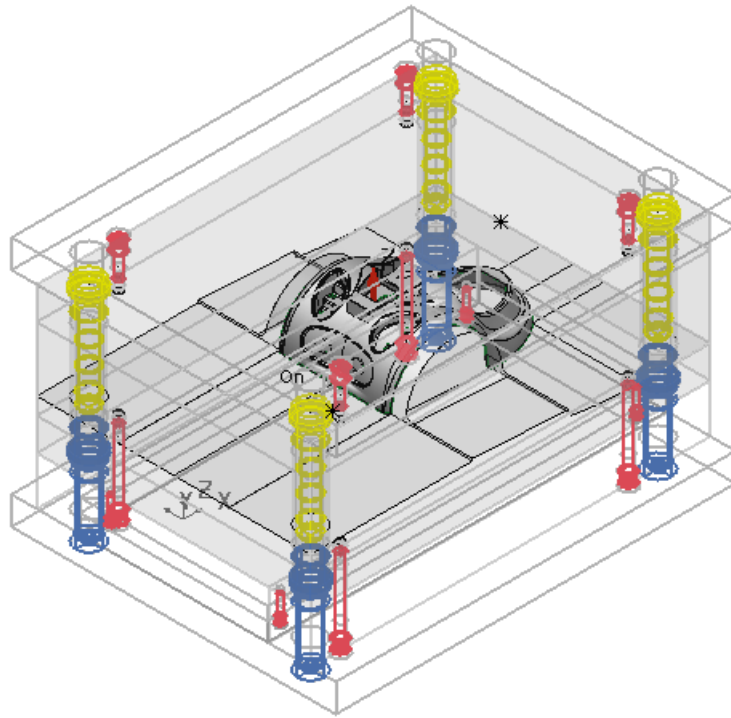
Type: K11 (overhang in width)

Thickness: 56

< Back Next > Cancel Help

25 Click **Next**.

All the components are displayed on the model.



26 Do the following:

- 1** Select **Guide pillars**.

② Click **Dimensions**.

Mold Base Wizard

Components

- Guide pillars
- Guide bushes
- Centering sleeves
- Fixed half screws
- Moving half screws
- Ejector base plate screws

Remove Add...

Show the component

Catalogue HASCO

Type Z00

Body length 46

Shank diameter 40

Shank length 165

Dimensions: Standard, mms

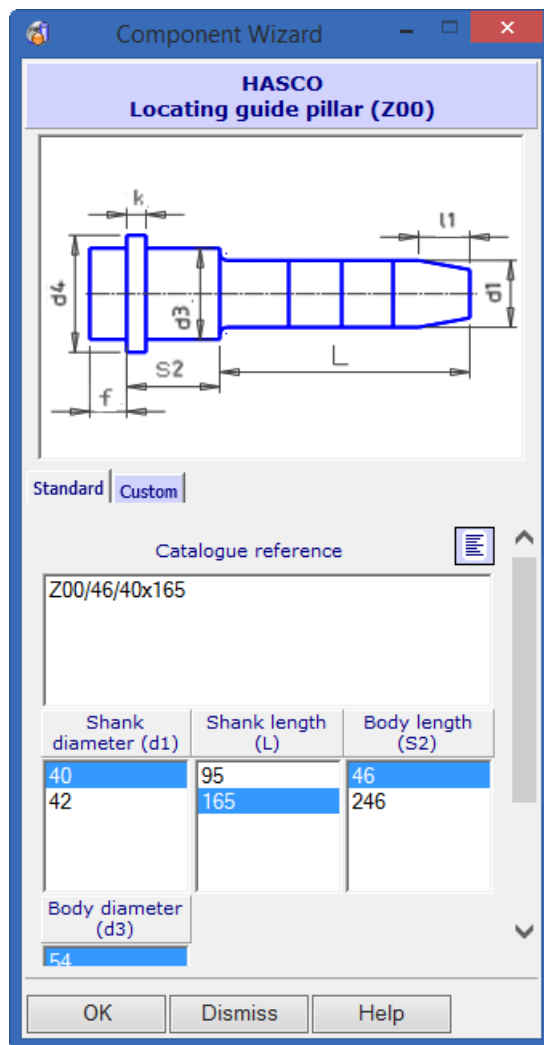
Product code: Z00/46/40x165

Dimensions...

Levels...

< Back Next > Cancel Help

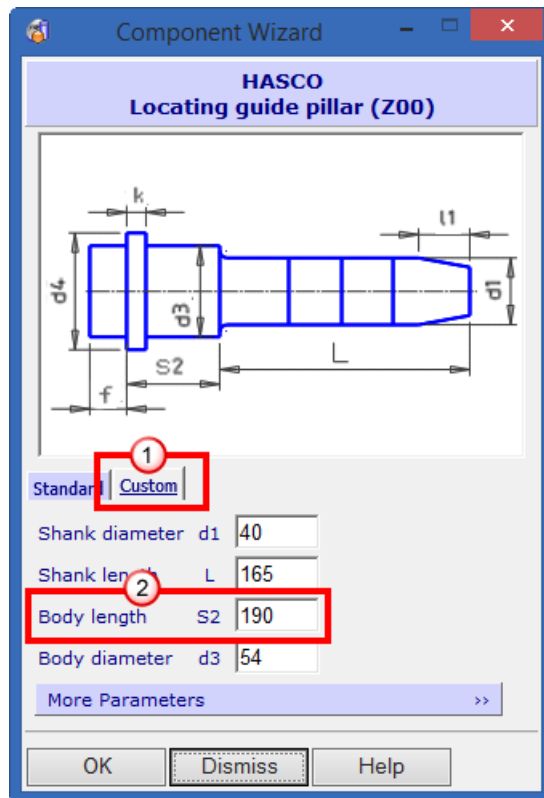
The **Component Wizard** is displayed, shown in the image below:



27 Do the following:

- 1 Select **Custom** tab.

- ② Change **Body length S2** to **190**.

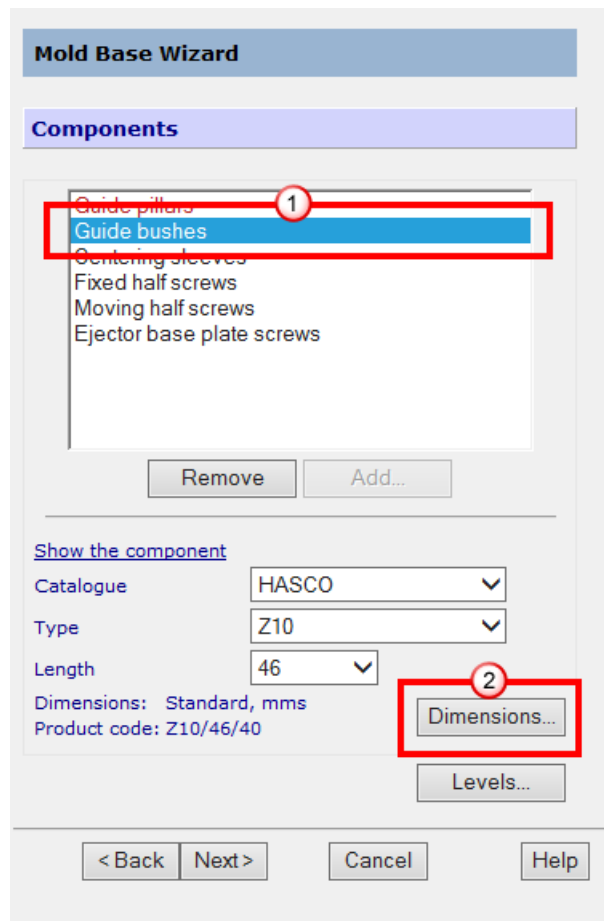


28 Click **OK**.

29 Do the following:

- ① Select **Guide bushes**.

② Click **Dimensions**.

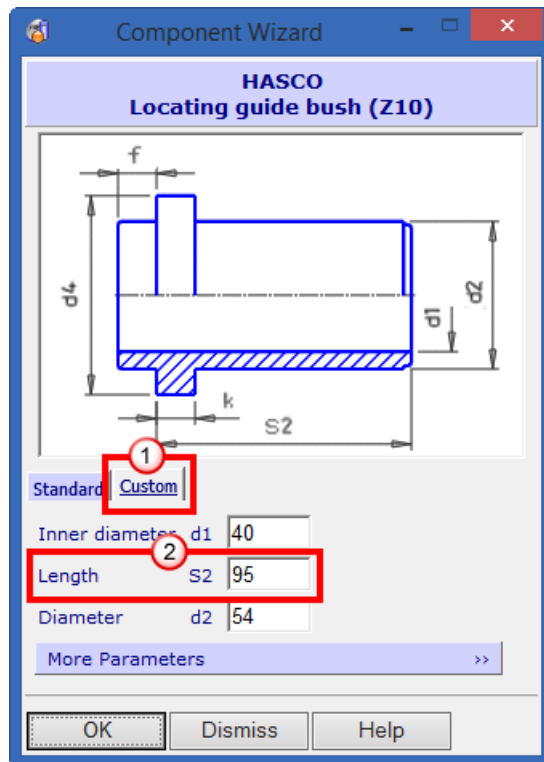


The **Component Wizard** is displayed.

30 Do the following:

① Select **Custom** tab.

- ② Change the **Length S2** to **95**.



The guide pillars and guide bushes have been adjusted to fit one side of the split line. The other side will be done manually, later.

31 Click **OK**

32 Click **Next**.

The summary is displayed.

Mold Base Wizard

You have successfully completed the Mold Base Wizard

You specified the following parameters for the mold base:

Mold base	
Catalogue	HASCO
Type	Standard mold
Guide pillars	Fixed half
Rotation angle	270
Width	546
Length	796
Dimensions	Standard

Cavity plate	
Type	K20
Thickness	226
Material	1730
Dimensions	Custom

Top clamping plate	
Type	K11 (overhang in width)
Thickness	56
Material	1730
Dimensions	Standard

Core plate	
Type	K20
Thickness	226
Material	1730
Dimensions	Custom

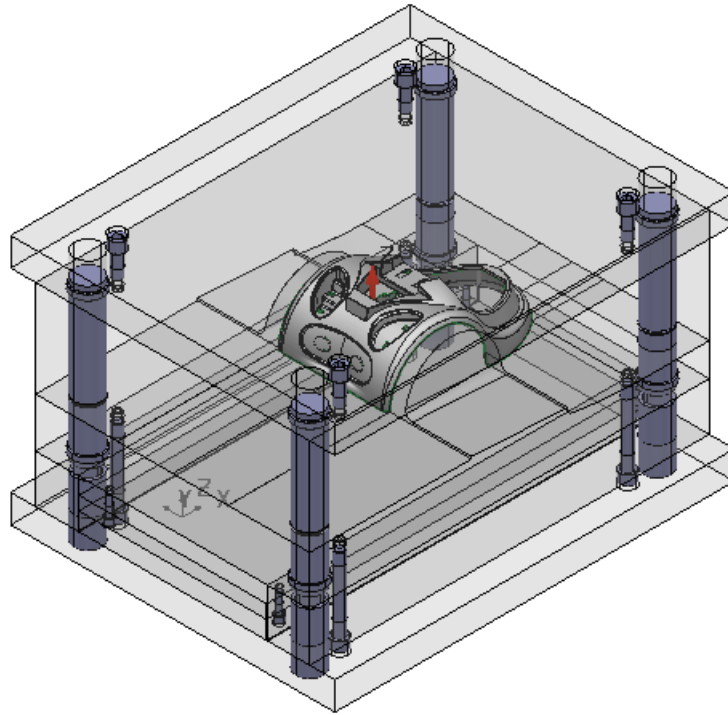
Risers	
Type	K40 (standard form)
Thickness	96
Material	1730
Dimensions	Standard

Bottom clamping plate	
-----------------------	--

< Back Finish Cancel Help

33 Click **Finish**.

The mold base is created from components and have been added into an assembly.

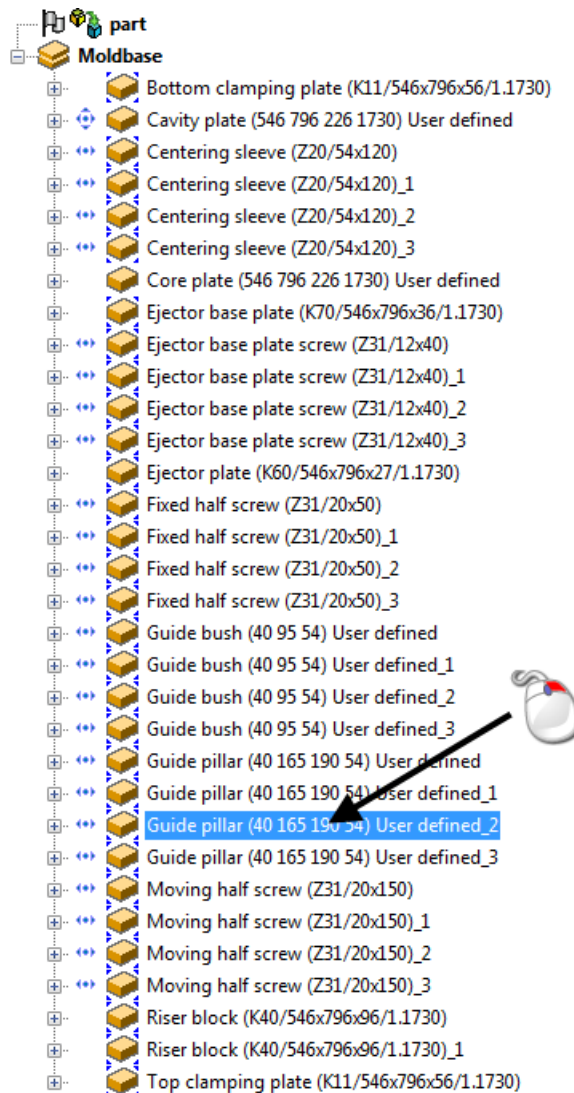


The components in the mold base are displayed in the tree window.

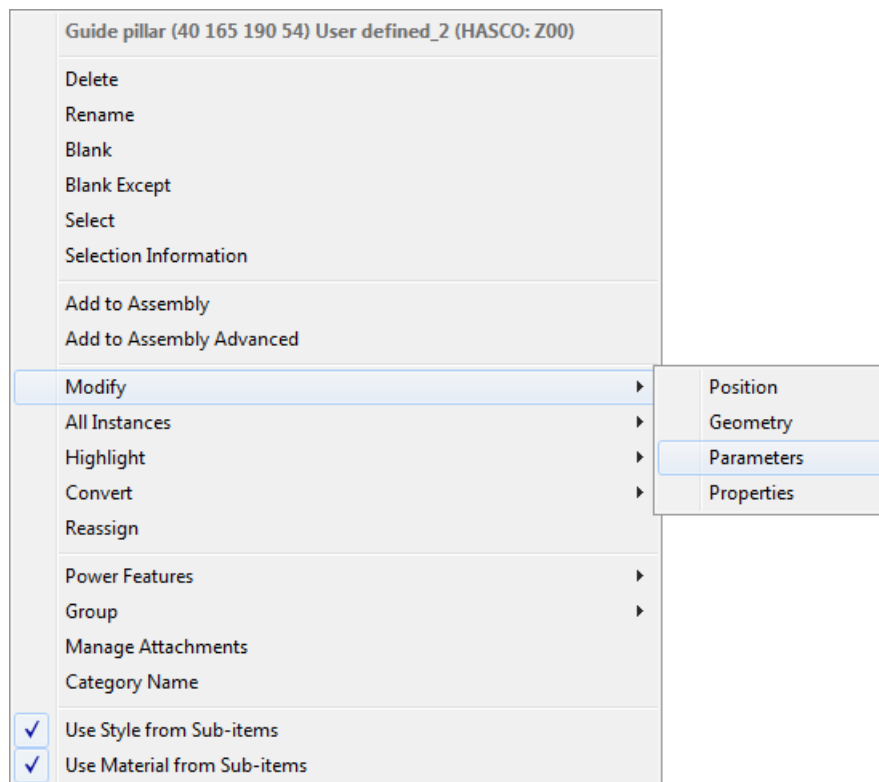


Click  to expand the tree.

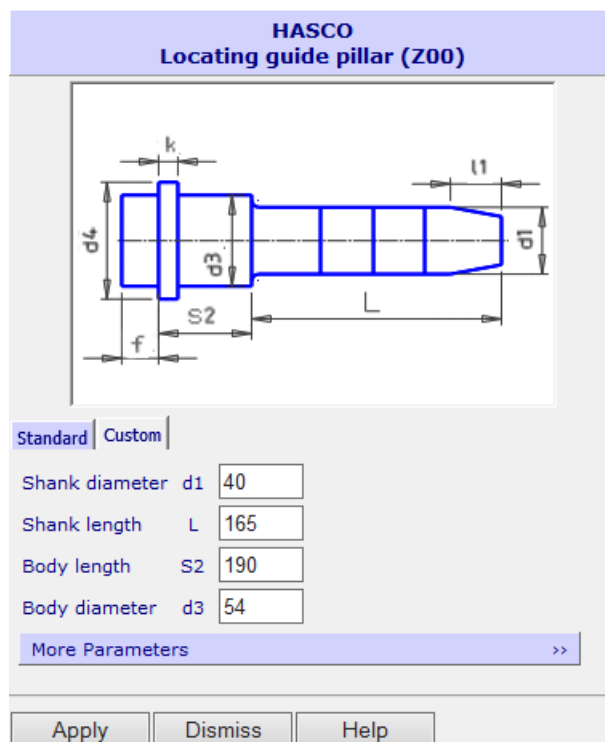
34 Click **Guide pillar (40 165 190 54) User defined_2** using the right mouse button.



35 Select **Modify > Parameters**.

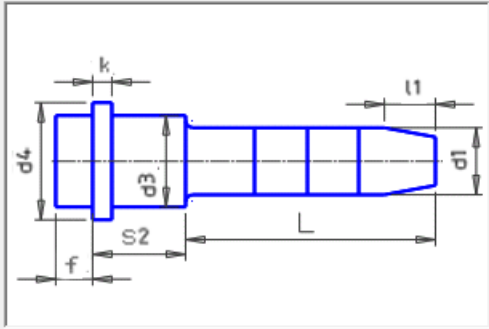


The parameter page of the wizard is displayed.



36 Change **S2** to **220**

HASCO
Locating guide pillar (Z00)



Standard | Custom

Shank diameter d1 40

Shank length L 165

Body length S2 220

Body diameter d3 54

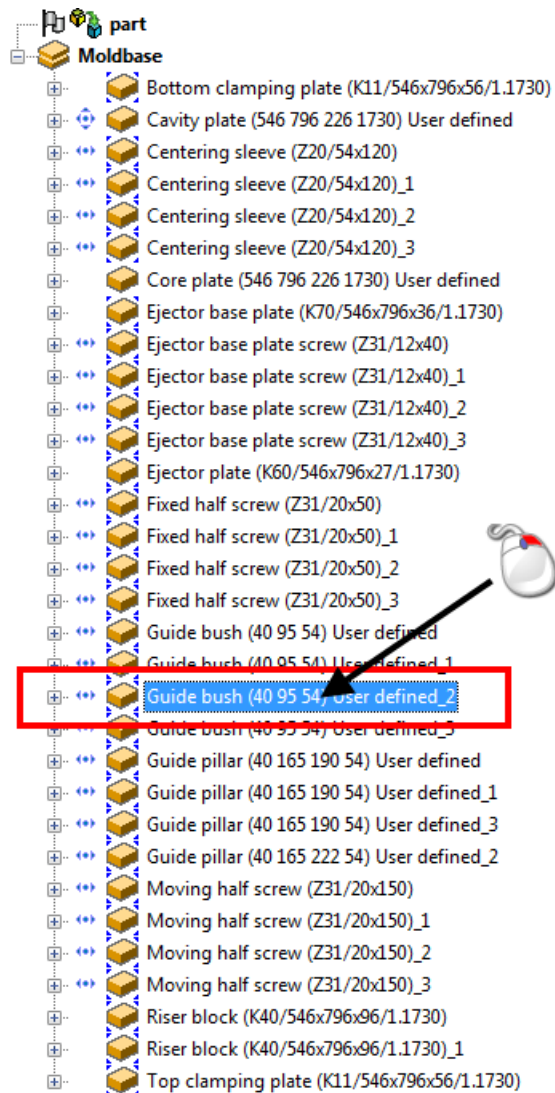
More Parameters >>

Apply Dismiss Help

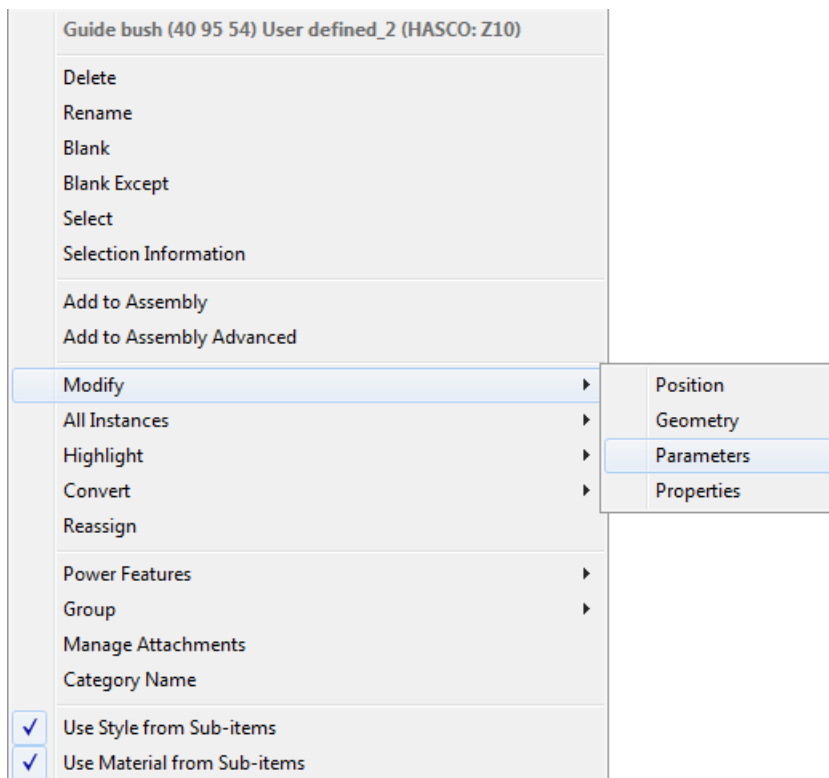
37 Click **Apply**.

38 Click **Dismiss**.

39 Click **Guide bush (40 95 42) User defined_2** using the right mouse button.

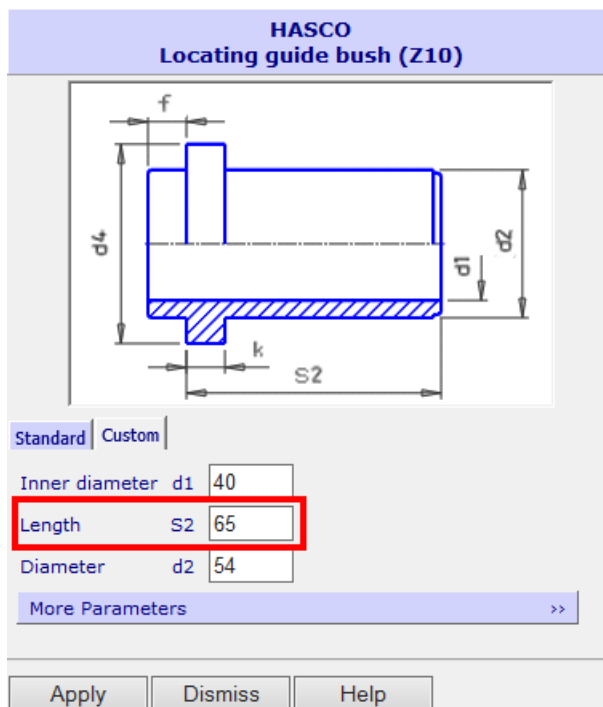


40 Select Modify > Parameters.



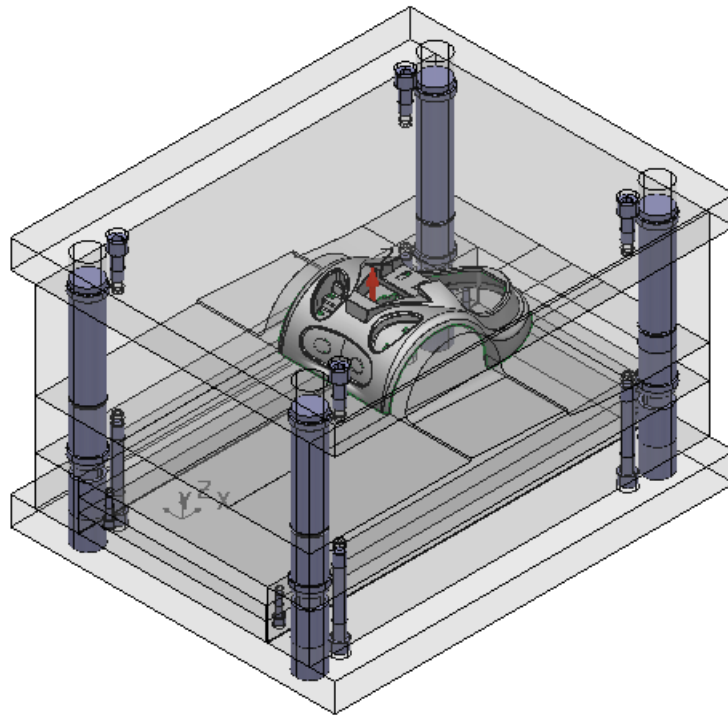
The parameter page of the wizard is displayed.

41 Change S2 to 65.



42 Click Apply.

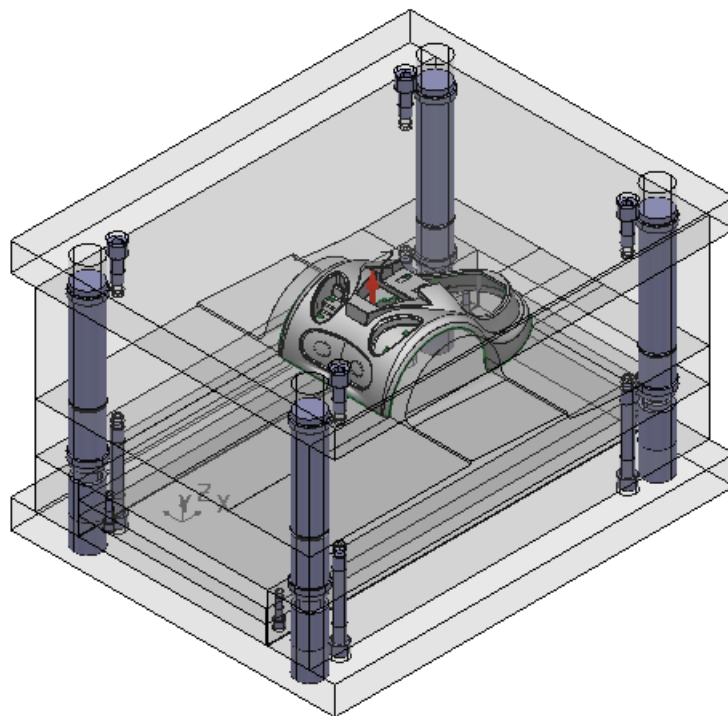
43 Click **Dismiss**.



44 Repeat steps 35 to 43 for the following components:

- **Guide pillar (40 165 222 54) User defined_3.**
- **Guide bush (40 95 54) User defined_3.**

Your model should look like the one shown below:

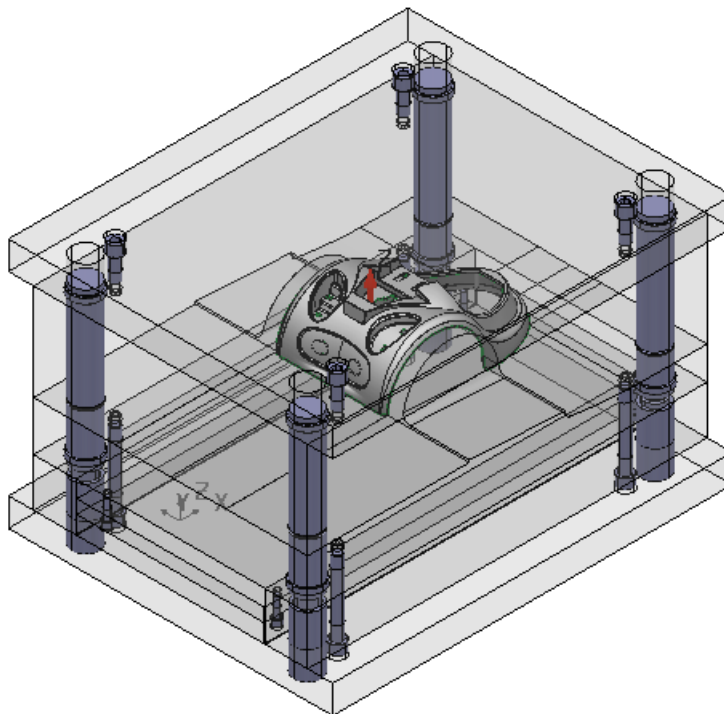


Creating a mold lock

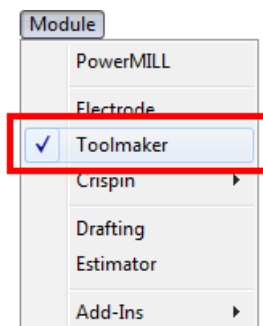
3. Use the Mold Lock Wizard

- 1 Click **Import Data (Moldbase_3.psmodel)**.

[View the AVI](#)
[Import Data](#) ←
[Step by step instructions](#)



- 2 Click **Module** from the **Main** menu.
- 3 Make sure ✓ is displayed next to **Toolmaker**.



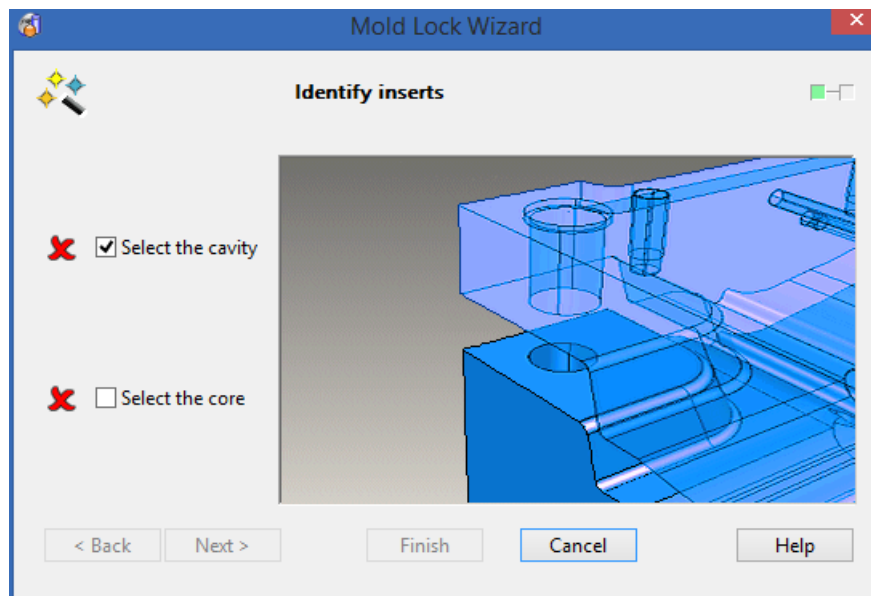
- 4 If ✓ is not displayed, click on **Toolmaker** to activate the module.
- 5 Click **Wizards** .

- 6 Click **Start Mold Lock Wizard** .



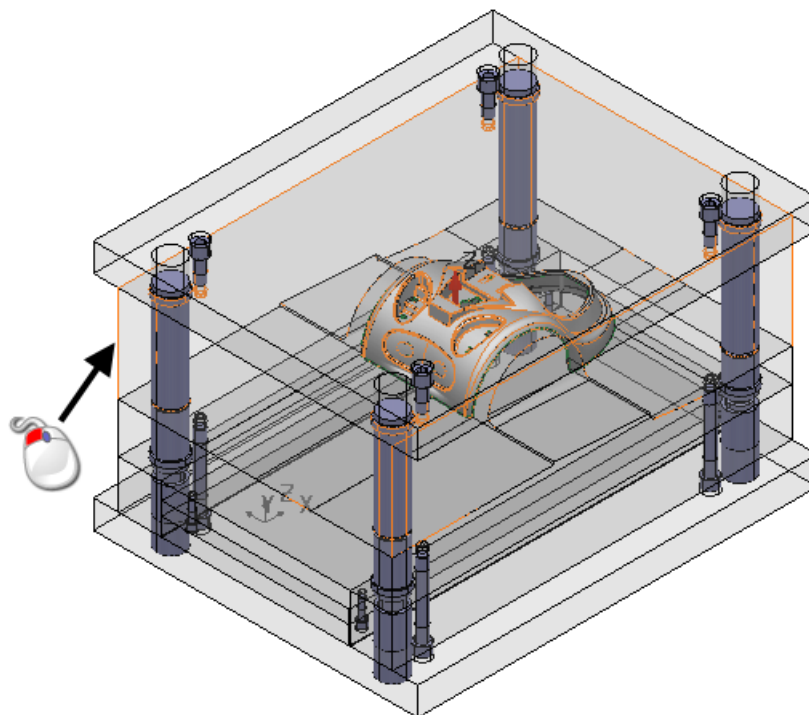
- 7 The **Mold Lock Wizard** dialog is displayed.

 *Mold locks are added to a mold base to keep the cavity and core plates in position so that they cannot move and destroy the part when it is created.*



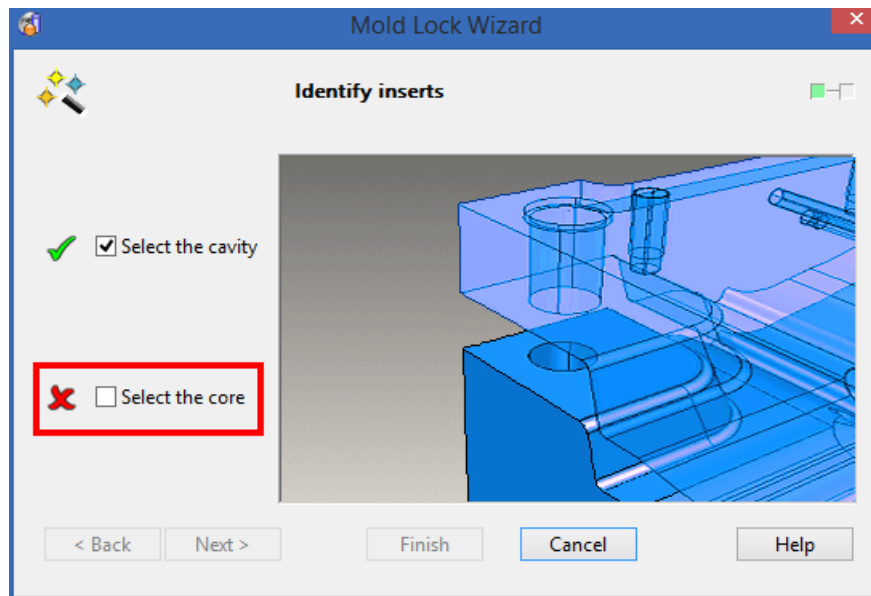
The cavity and core are selected and stored in the wizard.

- 8 Select the cavity plate shown below:

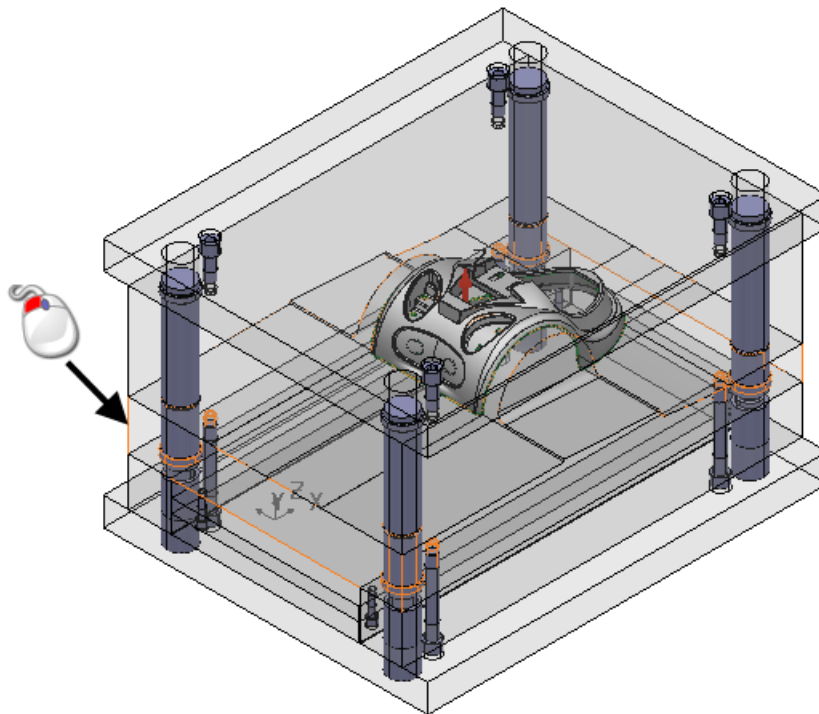


The cross **X** icon changes to a tick **✓** icon.next to **Select the cavity**.

9 Click **Select the core**.



10 Select the core plate shown below:



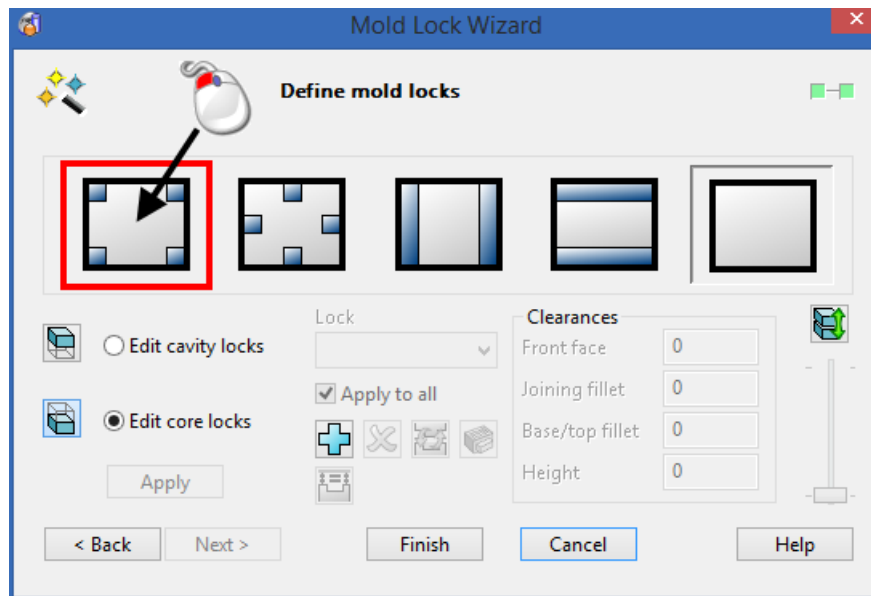
11 **X** changes to **✓** next to **Select the core**.

12 Click **Next**.

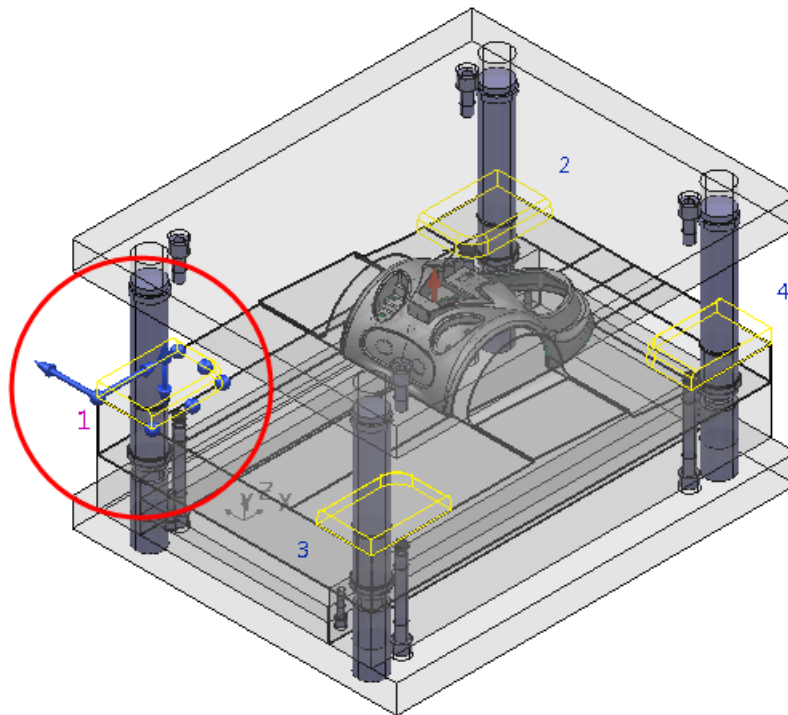


This page of the wizard is where the position and dimensions of the mold locks are defined.

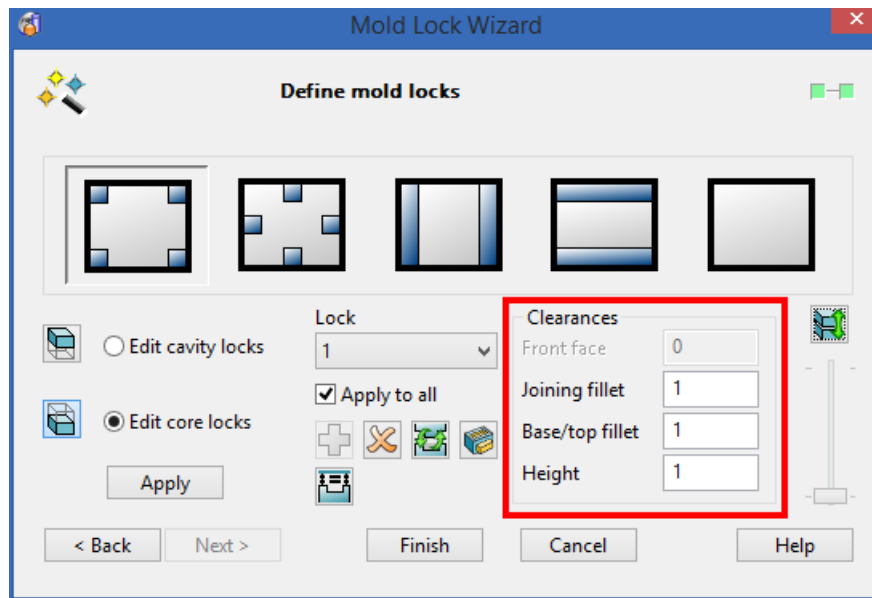
13 Select the *four corner* layout shown below:



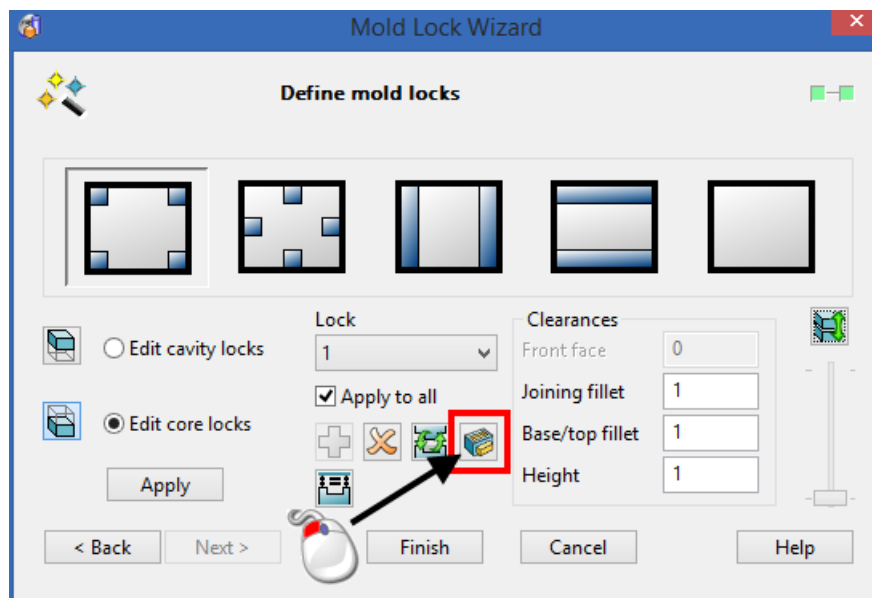
14 A preview of the mold locks are displayed on the model.
The mold locks are numbered 1 to 4.
1 is the *active* mold lock.



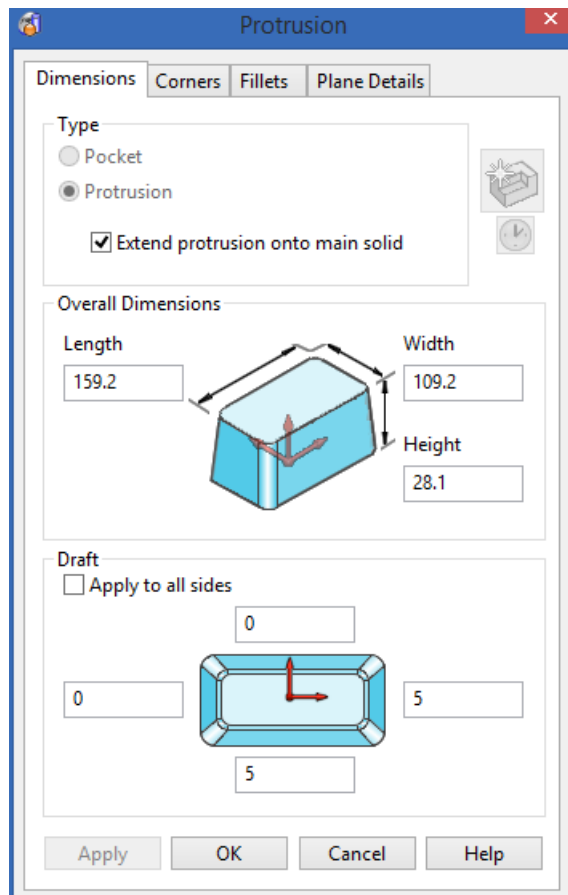
15 Change all the **Clearances** to 1.



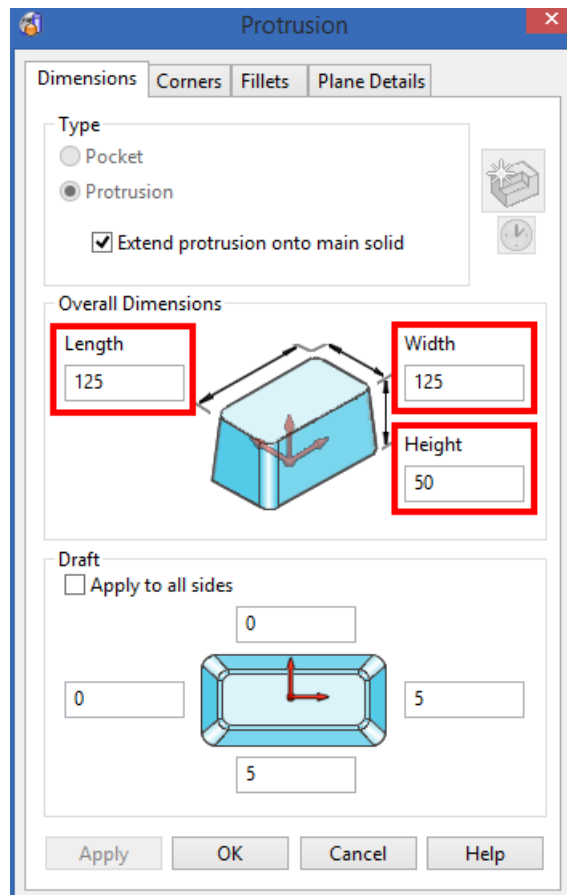
16 Click **Display the solid pocket dialog** .



17 The **Protrusion** dialog is displayed.



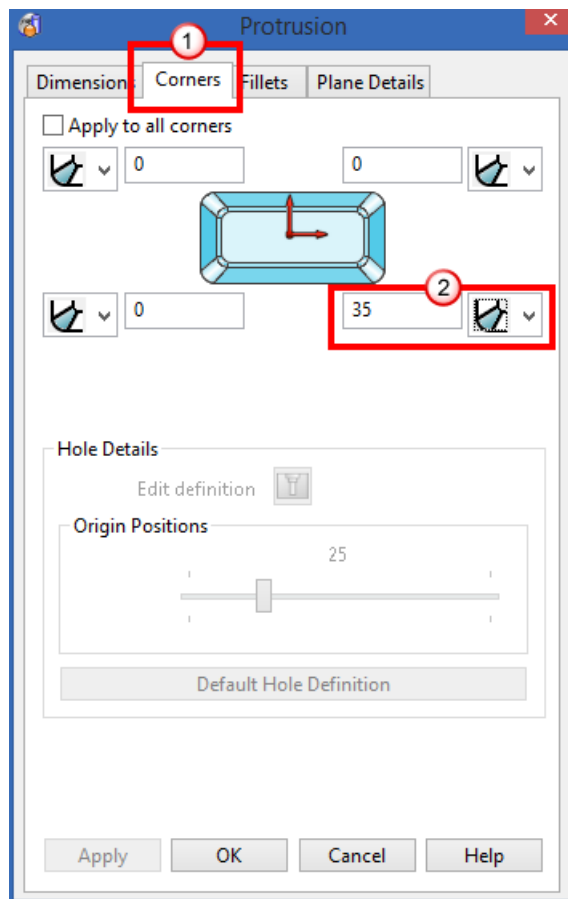
18 Change the **Dimensions** to those shown on the image below:



19 Do the following:

- 1 Click the **Corners** tab.

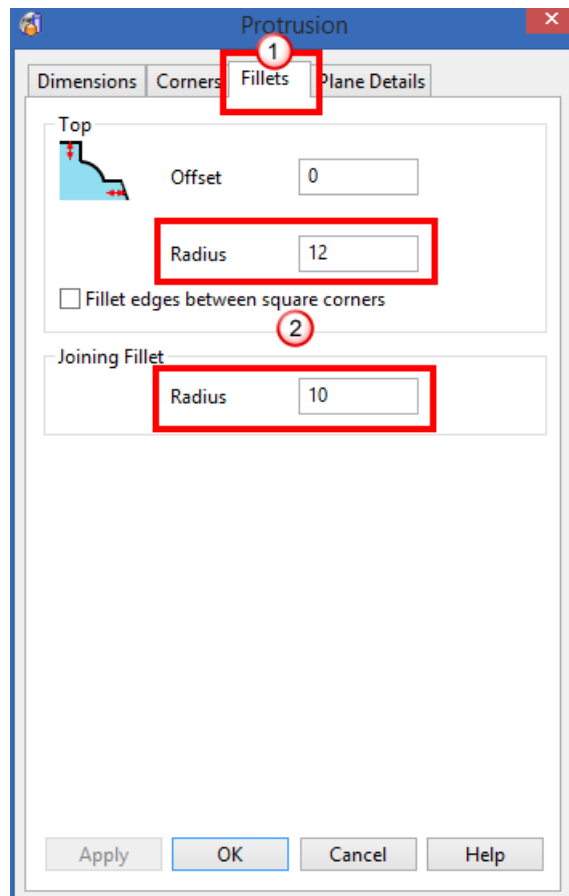
- ② Change the **Corner** value to **35**, shown in the image below:



- 20 Do the following:

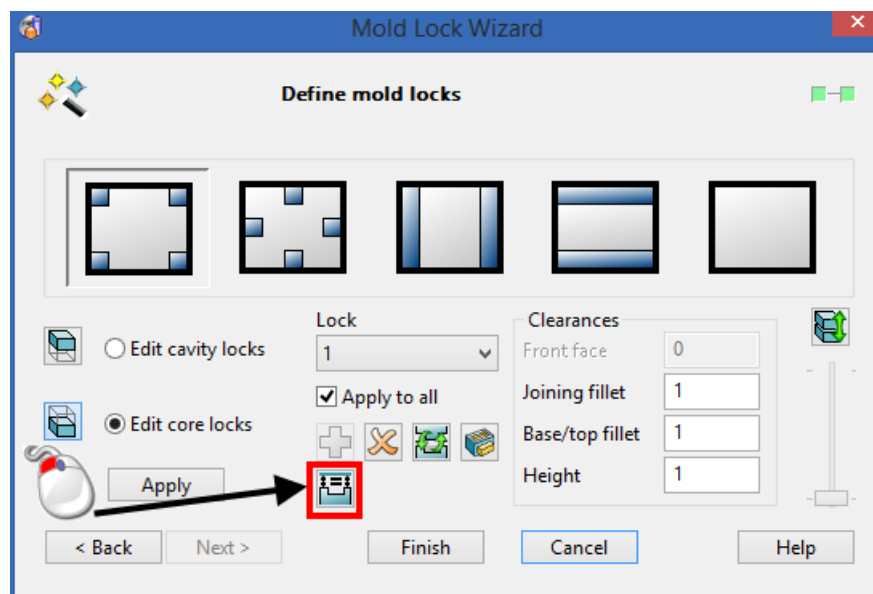
- ① Click the **Fillets** tab.

- ② Change the value of the **Fillets** shown in the image below:

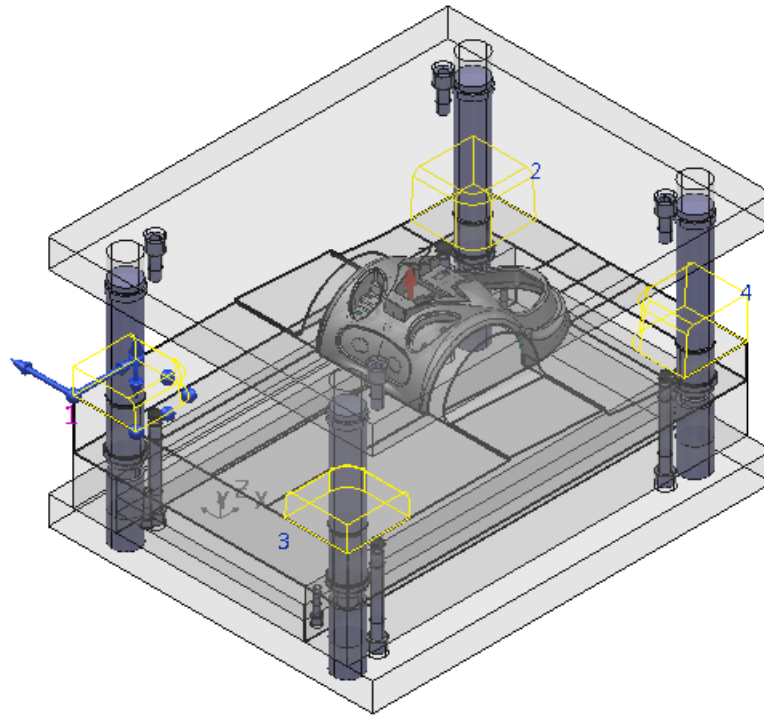


21 Click **OK**.

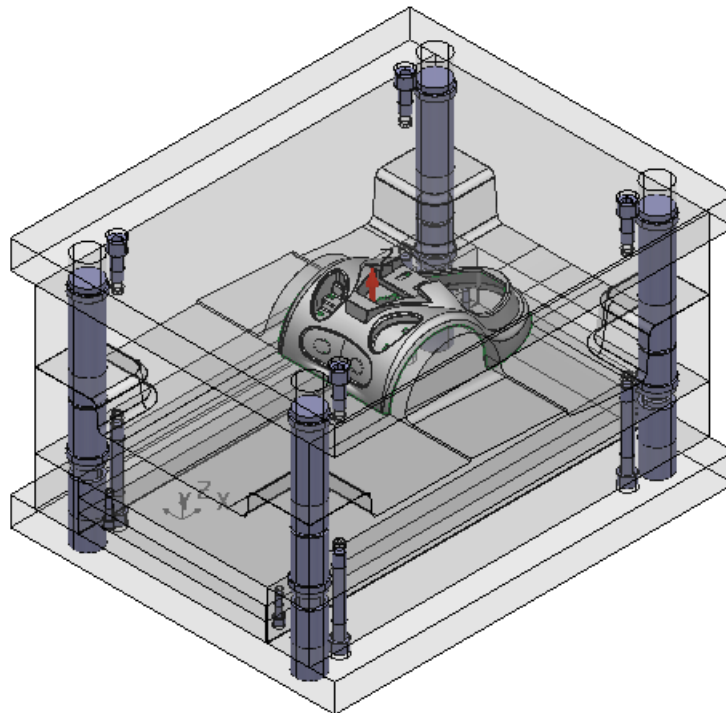
22 Click **Constant/variable z level for male halves** .



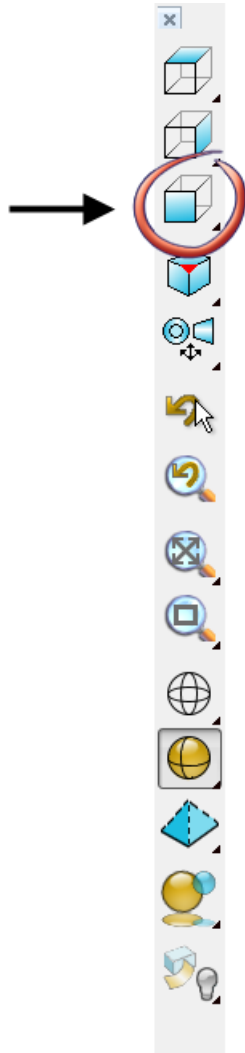
The model updates showing the different heights of the mold locks.



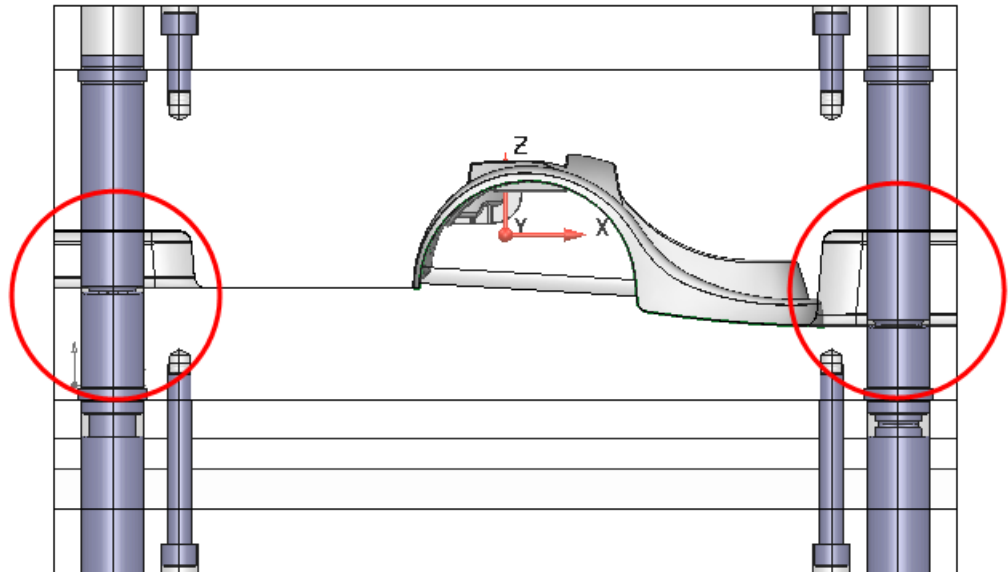
23 Click **Finish**.



24 Click **View from Front** .



Your model should look like the one shown below:



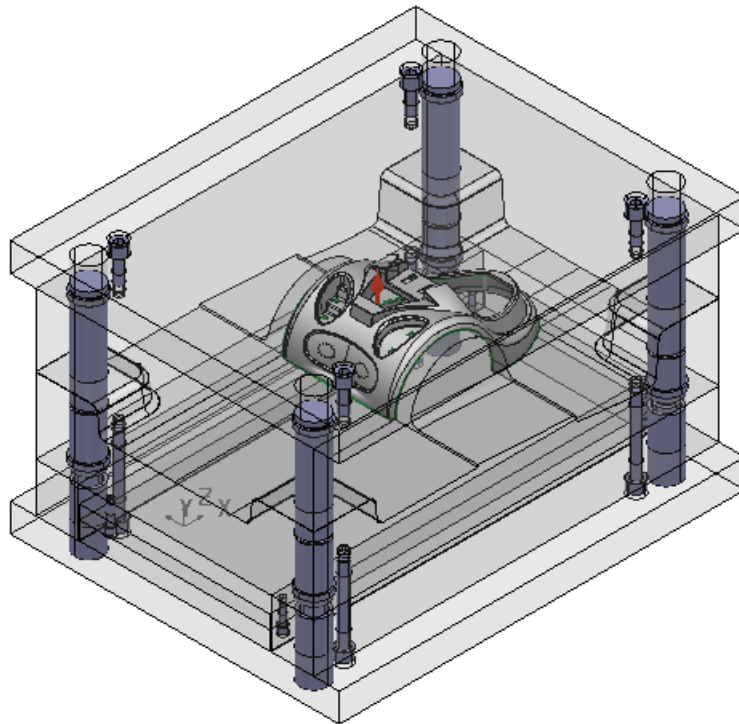
This shows how the mold locks have been changed so that they are the same height, even though the split line is variable.

Creating a slide core and slide mechanism

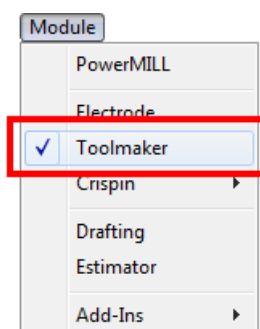
4. Use the Slide Core Wizard

- 1 Click **Import Data (Moldbase_4.psmodel)**.

View the AVI
Import Data ←
Step by step instructions



- 2 Click **Module** from the **Main** menu.
- 3 Make sure ✓ is displayed next to **Toolmaker**.



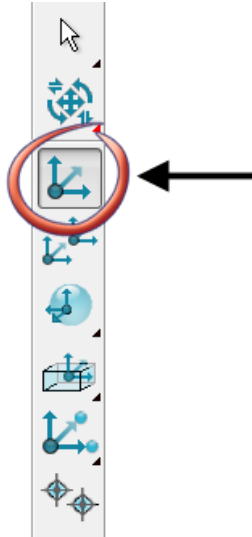
- 4 If ✓ is not displayed, click on **Toolmaker** to activate the module.

- 5 From the **Status Bar** at the bottom of the screen, click the Z principal plane.

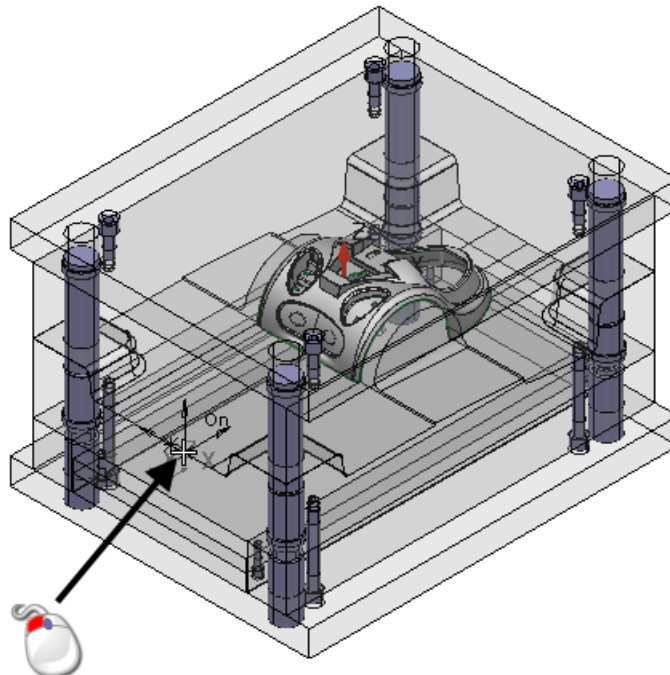


- 6 Click **Workplane** .

- 7 Click **Single workplane** .



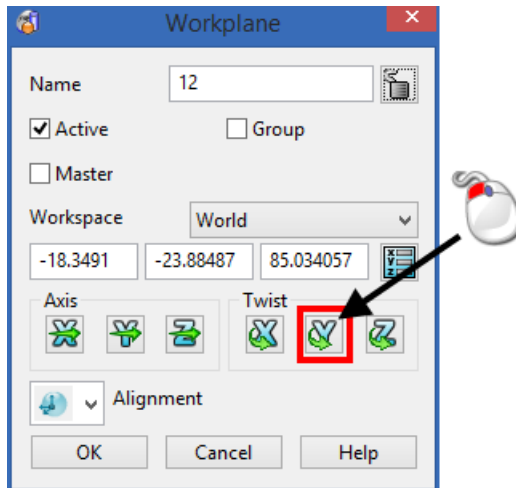
- 8 Click on the model shown in the image below:



- 9 Click **Edit > Modify..**

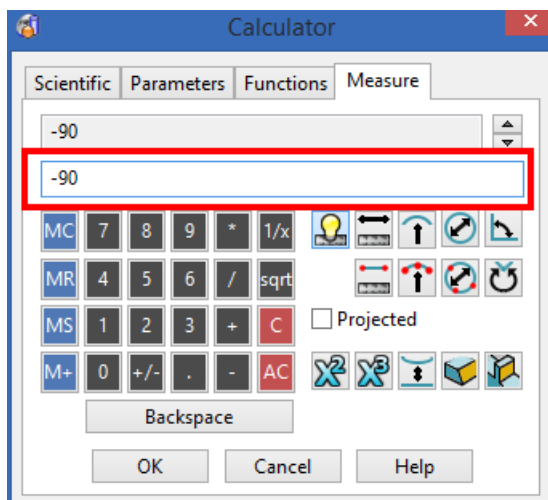
The **Workplane** dialog is displayed.

10 Click **Twist around Y**.



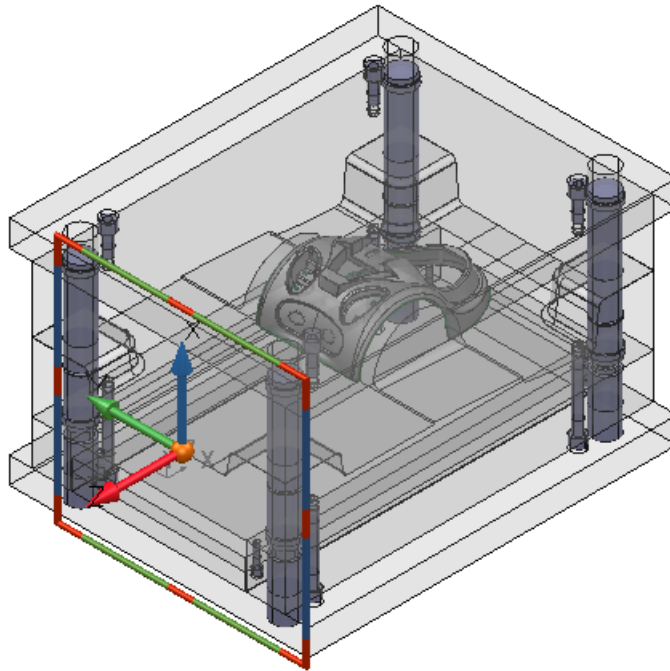
The **Calculator** is displayed.

11 Enter **-90**.



12 Click **OK**.

13 Click **OK**.



The workplane is now in the correct direction to create the slide core.



The Z axis must point away from the model in the direction that the slide will move. The X axis is in the split direction of the model and points towards the top of the slide.

14 Click **Wizards**



15 Click **Start Slide Wizard** .



16 The **Slide Wizard** starts.

The **Create a slide core..** option is already selected.

Slide Wizard (1)

☒ Create a slide core...

☐ Register Workplanes and optional pre_modelled slide cores in order to be used to design slide mechanisms...

☐ Design slide mechanisms...

Slide Core Wizard

- Before starting the Slide Core Wizard
 - Activate a workplane where :
 - Z is the slide movement axis.
 - X is toward the top of the slide.

Start Slide Core Wizard...

Slide Core Component Creation

- Register a slide core solid as a component.

No Slide Core found ▼Register

This functionality allows the creation of a slide core component without creating a full slide assembly. It allows the slide core component to be attached manually to any slide or another component created in the assembly.

< BackNext >CancelHelp

17 Click the **Start Slide Core Wizard** option.

Slide Wizard (1)

☒ Create a slide core...

☐ Register Workplanes and optional pre_modelled slide cores in order to be used to design slide mechanisms...

☐ Design slide mechanisms...

Slide Core Wizard

- Before starting the Slide Core Wizard
Activate a workplane where :
Z is the slide movement axis.
X is toward the top of the slide.

Start Slide Core Wizard...

Slide Core Component Creation

- Register a slide core solid as a component.

No Slide Core found ▼ Register

This functionality allows the creation of a slide core component without creating a full slide assembly. It allows the slide core component to be attached manually to any slide or another component created in the assembly.

< Back Next > Cancel Help

The type of core required for the mold is selected.

Slide Core Wizard

Select a Core Type

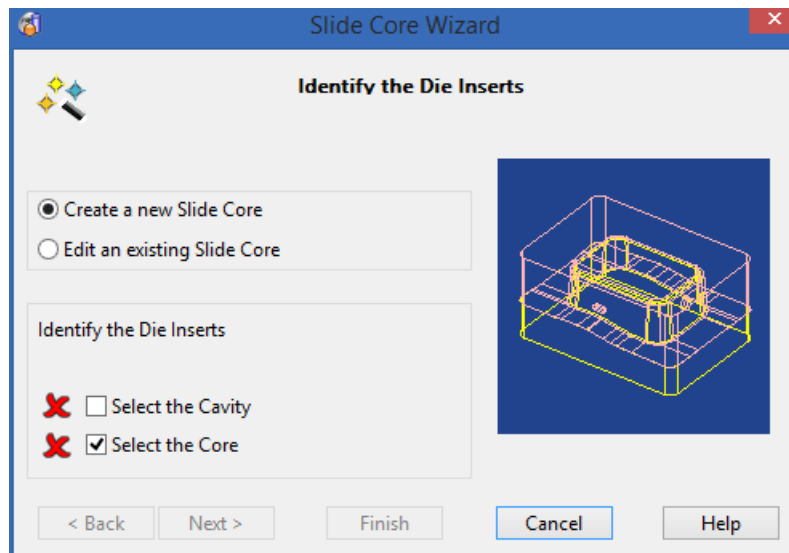
☒ Slide Core

☐ Core Puller

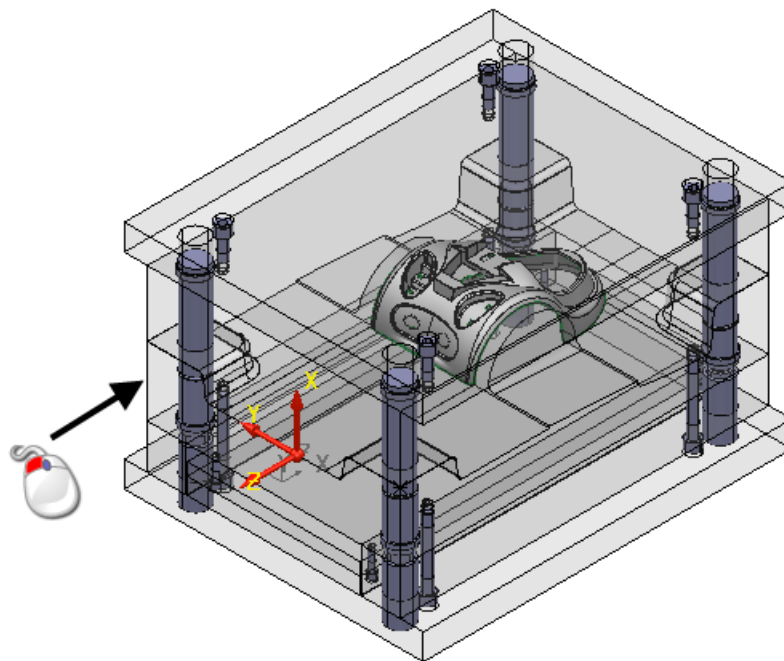
< Back Next > Finish Cancel Help

18 Click **Next**.

The cavity and core plates are stored into the wizard.

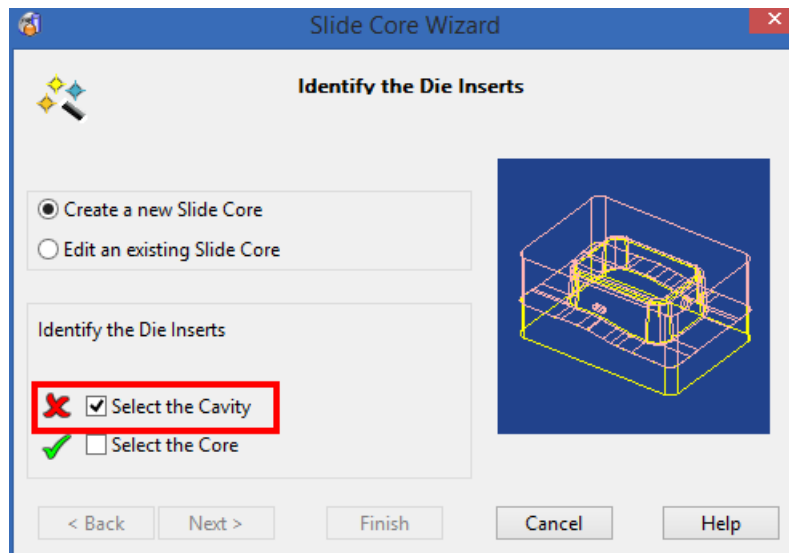


19 Click the core plate as shown below.

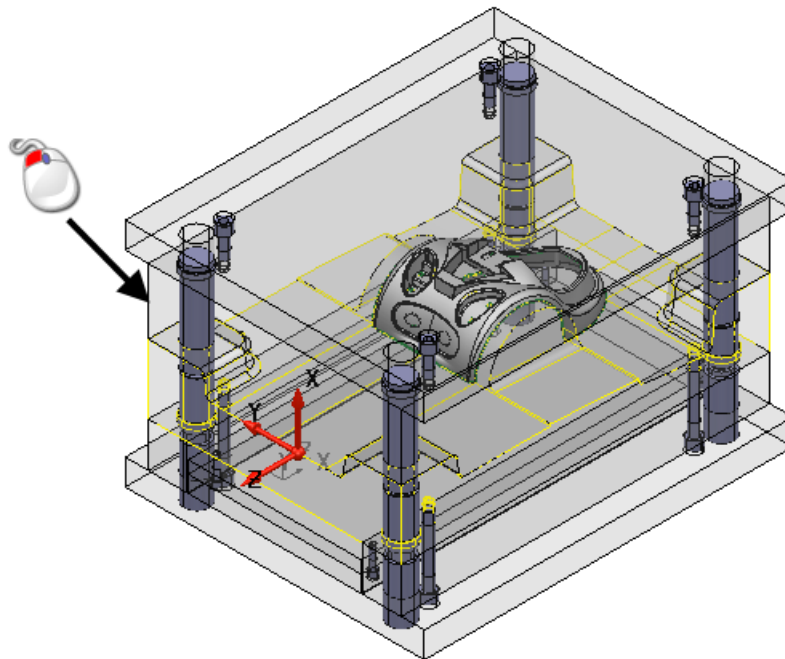


The cross **X** icon changes to a tick **✓** icon.

20 Click **Select the Cavity**.



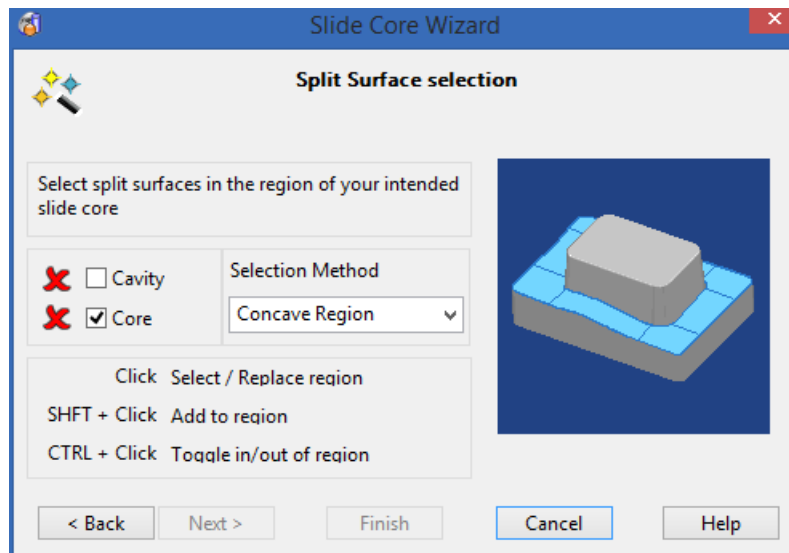
21 Click the cavity plate shown below:



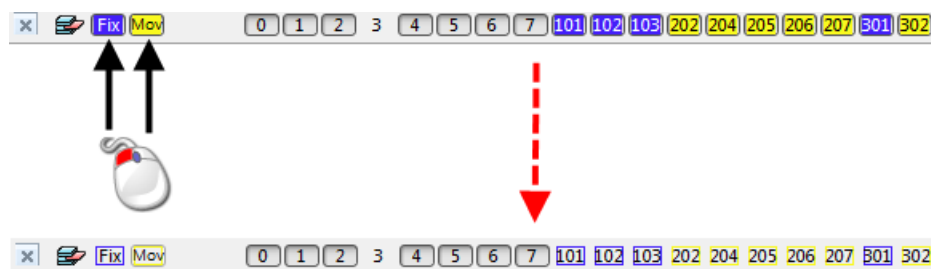
The cross **X** icon changes to a tick **✓** icon.

22 Click **Next**.

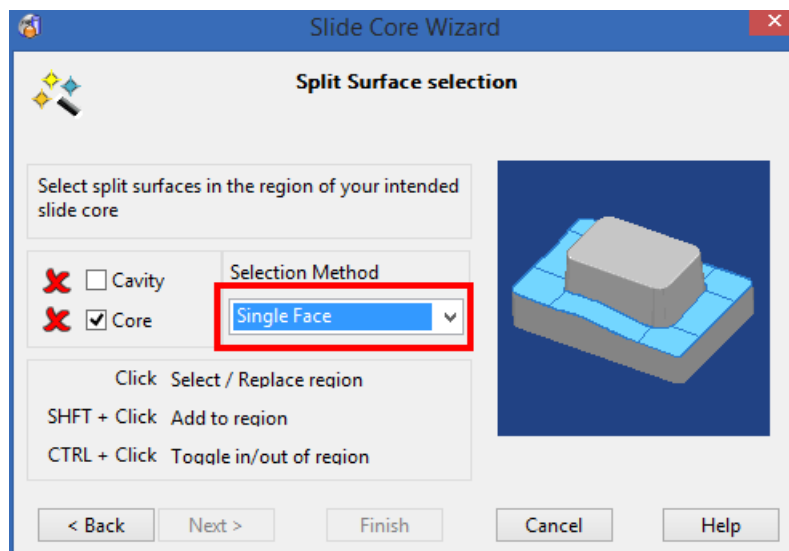
The split surfaces of the cavity and core plates have to be selected.



23 Click Group levels **Fixed Half** and **Moving Half** to turn them off.

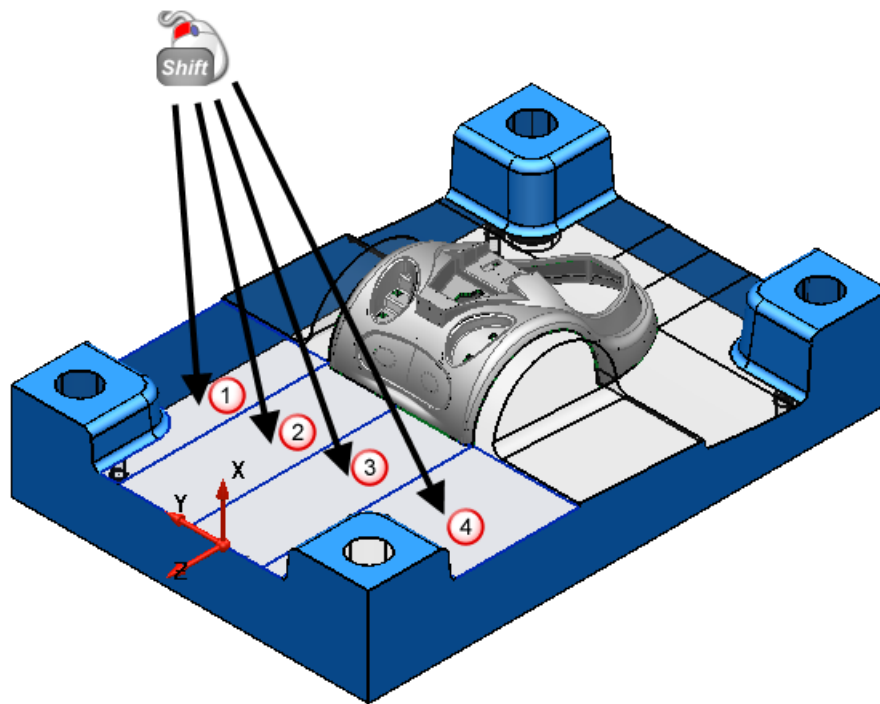


24 Click **Single Face** from the Selection Method drop down list.



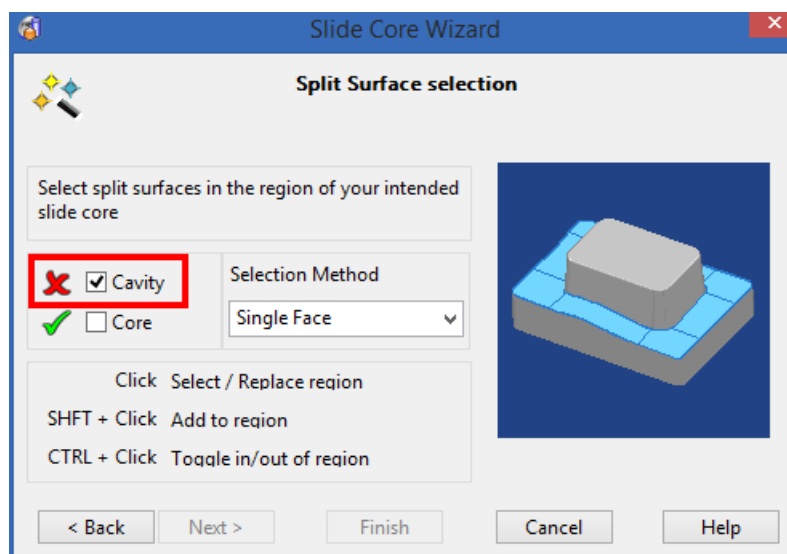
 You only need to select the split faces that surround the undercut.

25 Hold down the **Shift** key and click the four faces shown below;

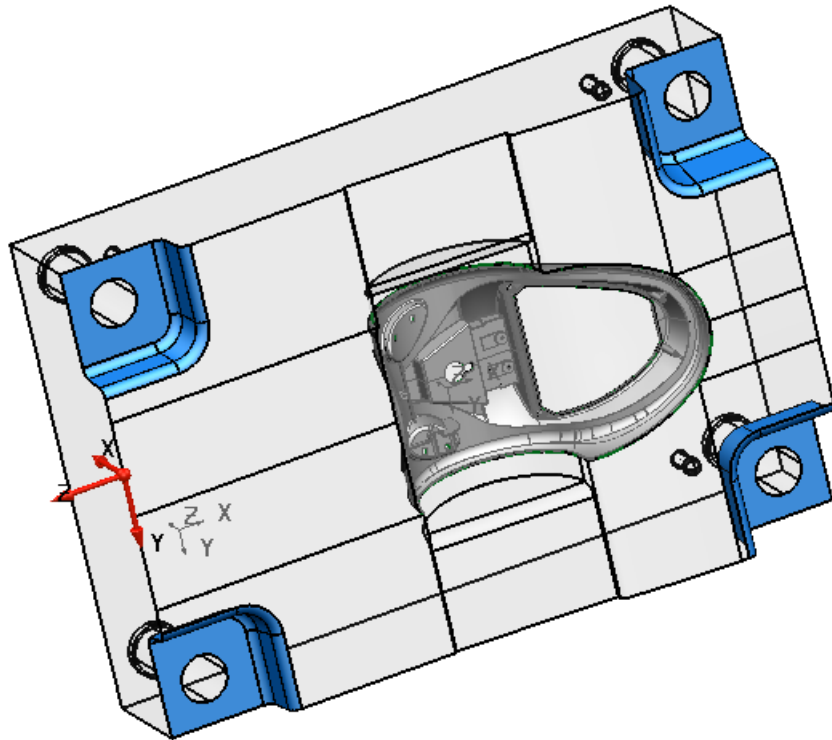


The cross **✗** icon changes to a tick **✓** icon.

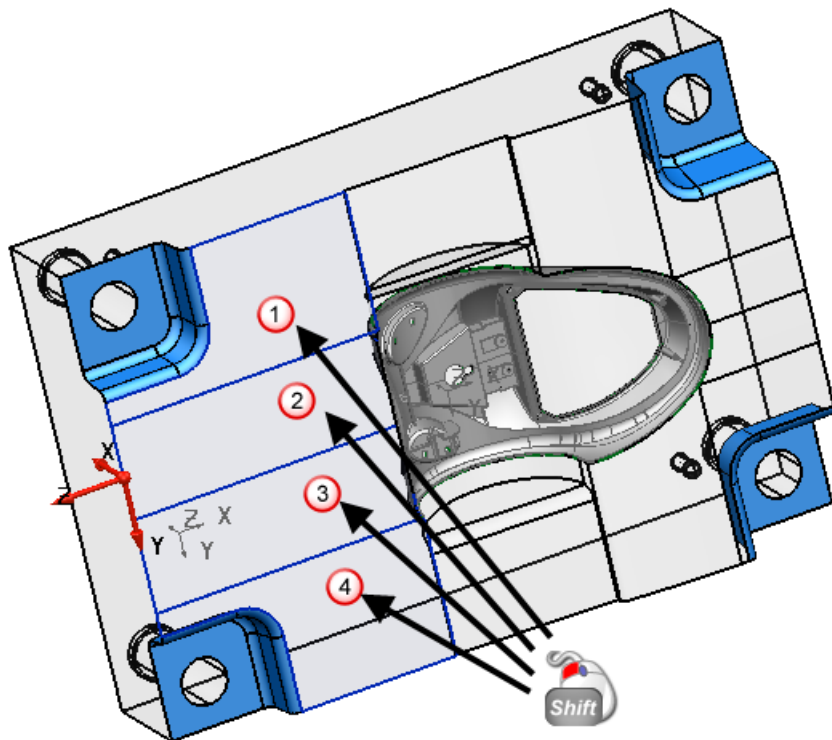
26 Click **Cavity**.



- 27 Click the middle mouse button and rotate the model so it looks like below.



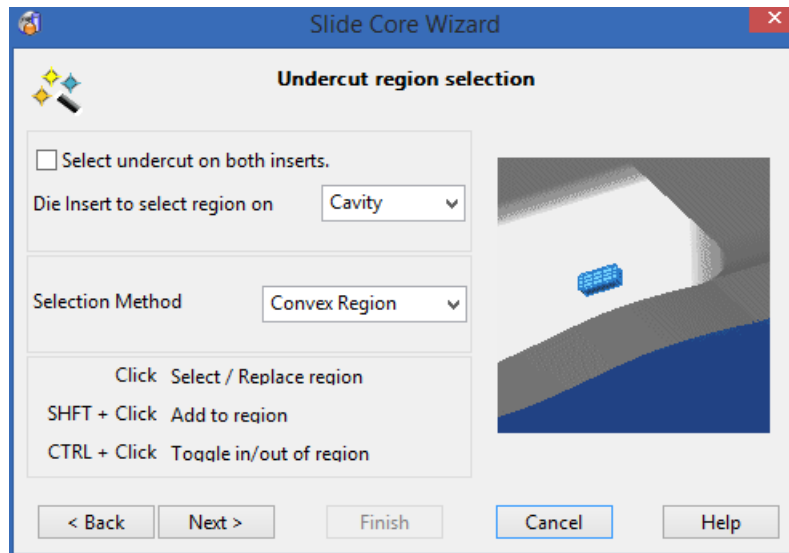
- 28 Hold down the **Shift** key and click the four faces shown below;



The cross  icon changes to a tick  icon.

- 29 Click **Next**.

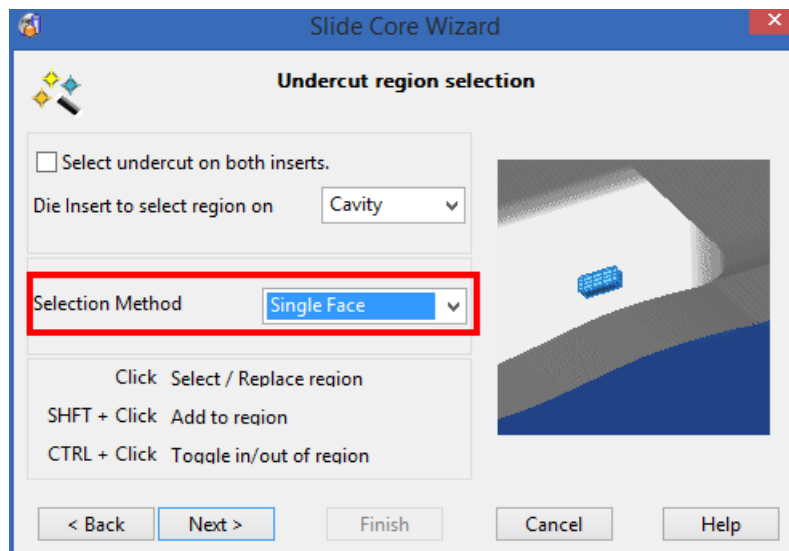
The undercut region is selected.



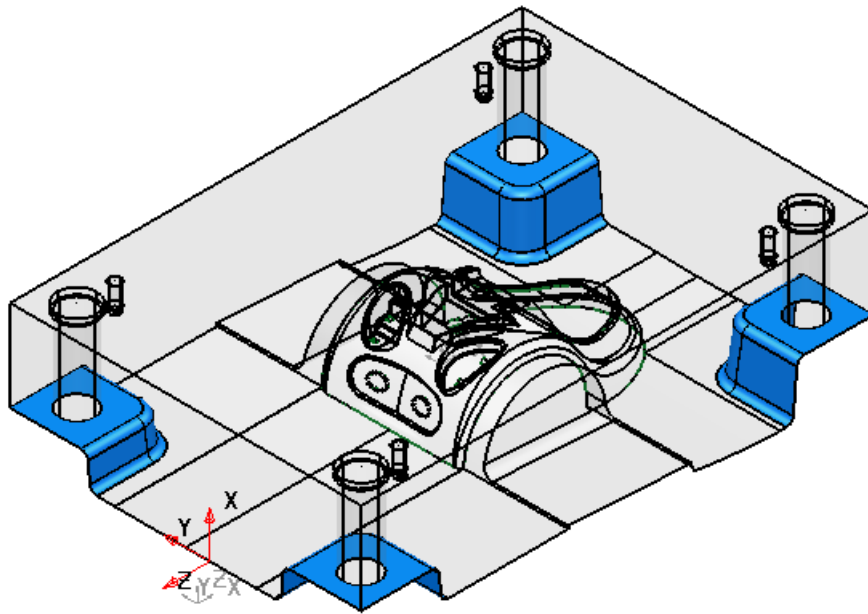
You only need to select the faces that create a box that covers the undercut.

30 Click **Last view** .

31 Click **Single Face** from the Selection Method drop down list.

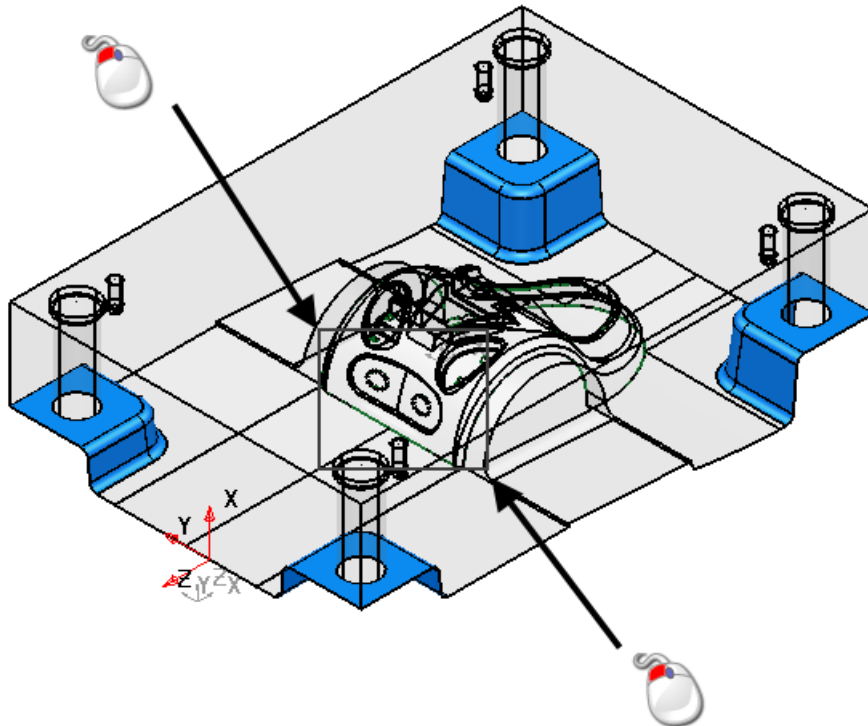


32 Click Level 5 to turn it off.



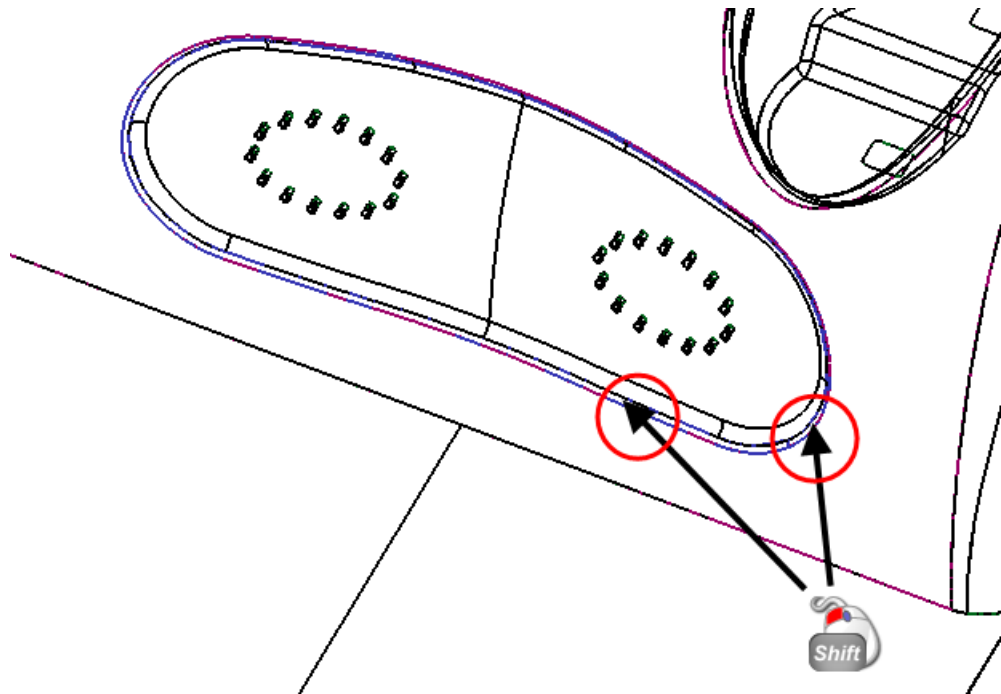
33 Click **Zoom to box Mode** .

34 Click the left mouse button and drag a box, as shown:

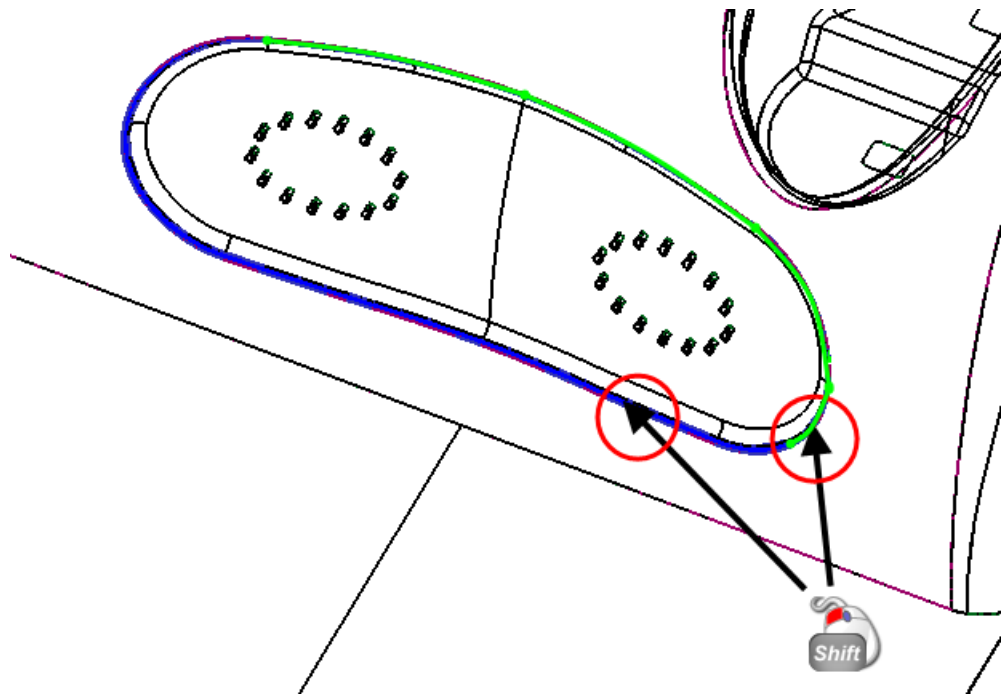


35 Click **Wireframe View** .

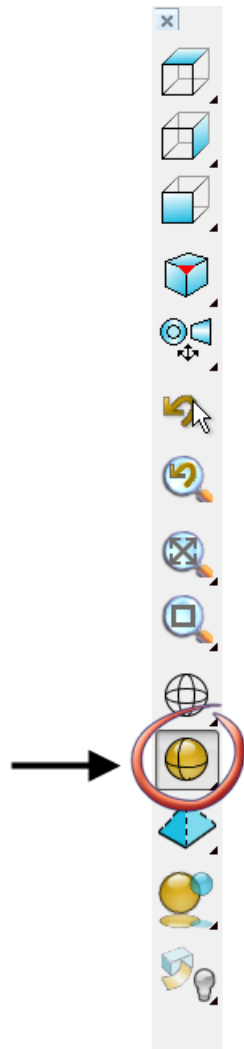
36 Hold down the **Shift** key and click on the two fillets shown below:



The two fillets (shaded for identification) should be selected.



37 Click **Shaded and Wireframe view** .

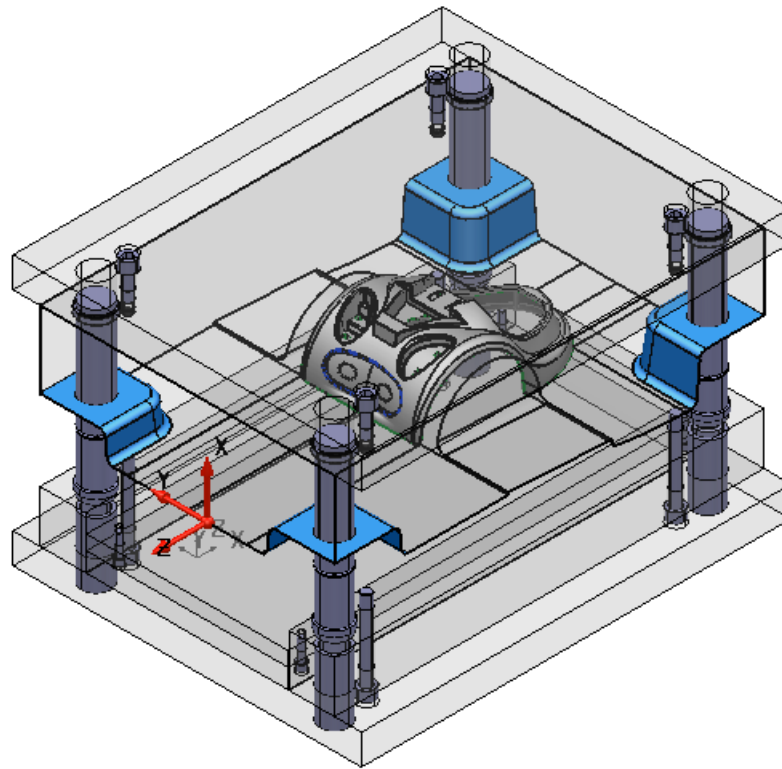


38 Click **Last view** .

39 Click Group levels **Fixed half** and **Moving half** to turn them on.

40 Click Level 5 to turn it on.

Your model should look like the one shown below:



41 Click **Next**.

The outer shape of the slide core is created from one of the following:

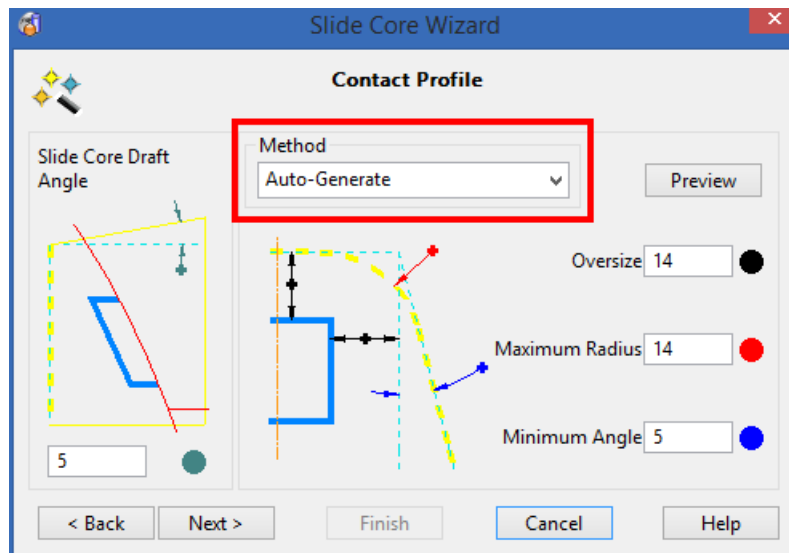
- A user defined curve projected onto the model.
- An automatically generated curve.

A draft angle can also be added.

42 Select the **Auto-Generate Method**.

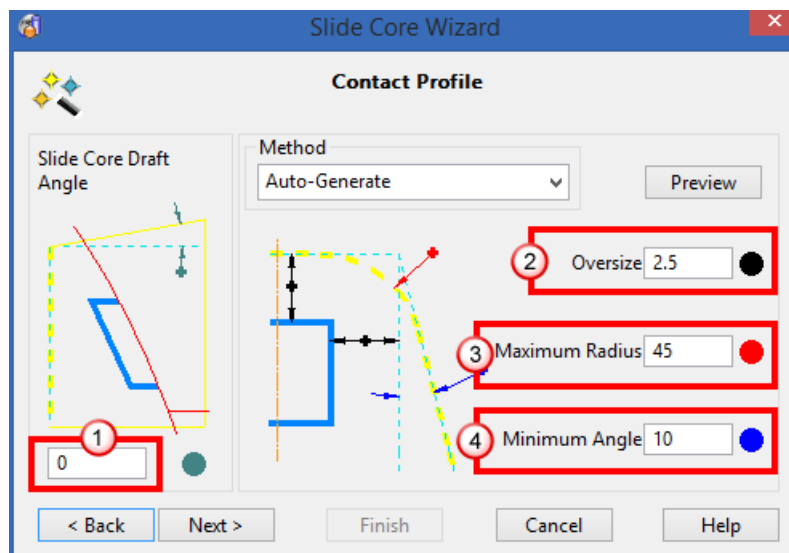


This option may be selected already.

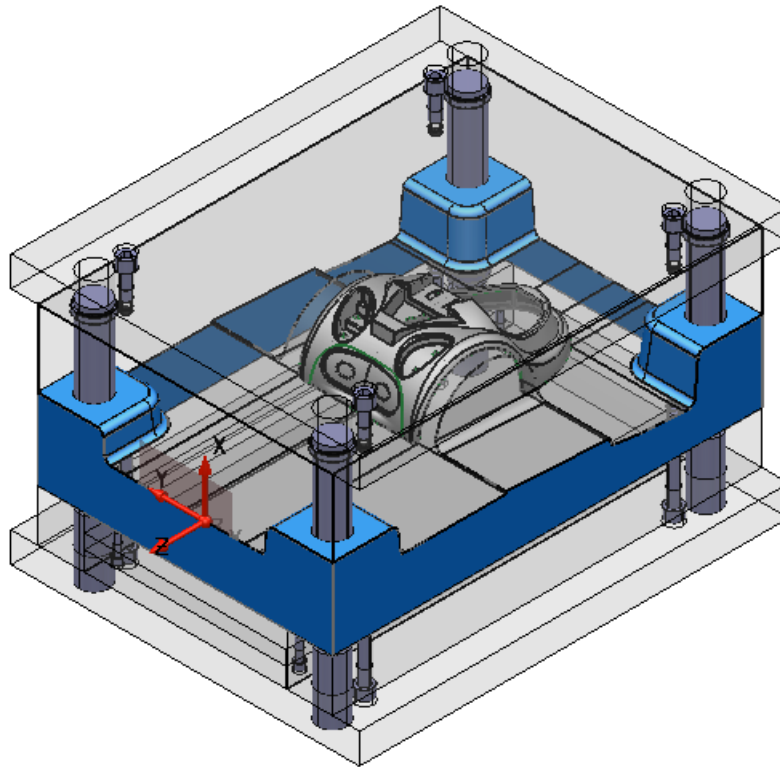


43 Do the following:

- ① Change the **Slide Core Draft Angle** to **0**.
- ② Change the **Oversize** to **2.5**.
- ③ Change the **Maximum Radius** to **45**.
- ④ Change the **Minimum Angle** to **10**.



44 Click **Resize to Fit** .

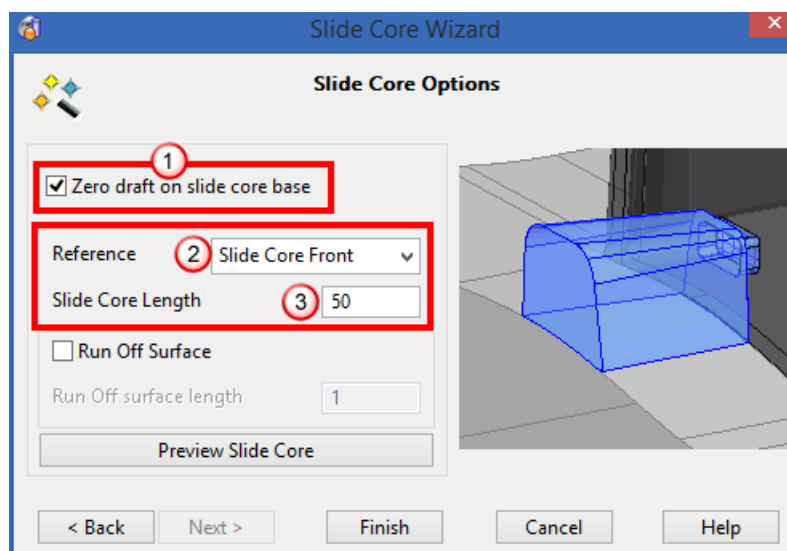


45 Click **Next**.

This page of the wizard is where the final dimensions of the slide core are specified. These dimensions define how the slide core interacts with the split surfaces of the cavity and core blocks.

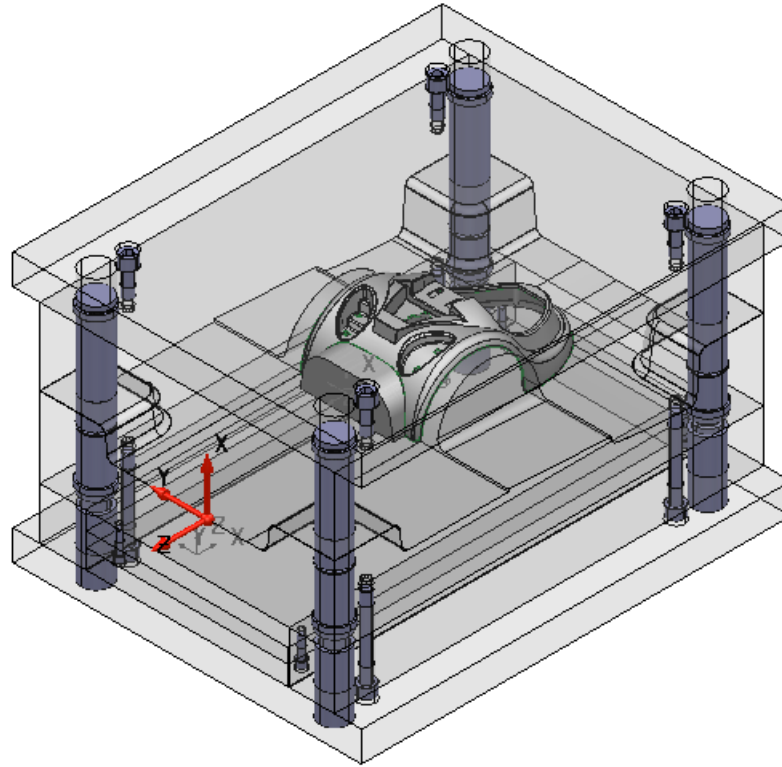
46 Do the following:

- ① Select the **Zero draft on slide core base** option.
- ② Change the **Reference** to the **Slide core front** option.
- ③ Change the **Slide Core length** to **50**.



47 Click **Finish**.

Your model should look like the one shown below:



48 Click **Register**.

This creates a component of the slide core and adds it to the assembly.

The image shows two stacked dialog boxes from the PowerSHAPE 2016 R1 software. The top dialog, titled "Slide Wizard (1)", contains three radio button options: "Create a slide core..." (which is selected), "Register Workplanes and optional pre_modelled slide cores in order to be used to design slide mechanisms...", and "Design slide mechanisms...". The bottom dialog, titled "Slide Core Wizard", contains a bullet point instruction: "Before starting the Slide Core Wizard Activate a workplane where : Z is the slide movement axis. X is toward the top of the slide." Below this is a "Start Slide Core Wizard..." button. The third section, titled "Slide Core Component Creation", contains a bullet point: "Register a slide core solid as a component." Below this is a dropdown menu showing "1" and a "Register" button, which is highlighted with a red rectangle. At the bottom of this section is explanatory text: "This functionality allows the creation of a slide core component without creating a full slide assembly. It allows the slide core component to be attached manually to any slide or another component created in the assembly." The bottom of the dialog features four buttons: "< Back", "Next >", "Cancel", and "Help".

Slide Wizard (1)

☒ Create a slide core...

☐ Register Workplanes and optional pre_modelled slide cores in order to be used to design slide mechanisms...

☐ Design slide mechanisms...

Slide Core Wizard

- Before starting the Slide Core Wizard
Activate a workplane where :
Z is the slide movement axis.
X is toward the top of the slide.

Start Slide Core Wizard...

Slide Core Component Creation

- Register a slide core solid as a component.

1 ▼ **Register**

This functionality allows the creation of a slide core component without creating a full slide assembly. It allows the slide core component to be attached manually to any slide or another component created in the assembly.

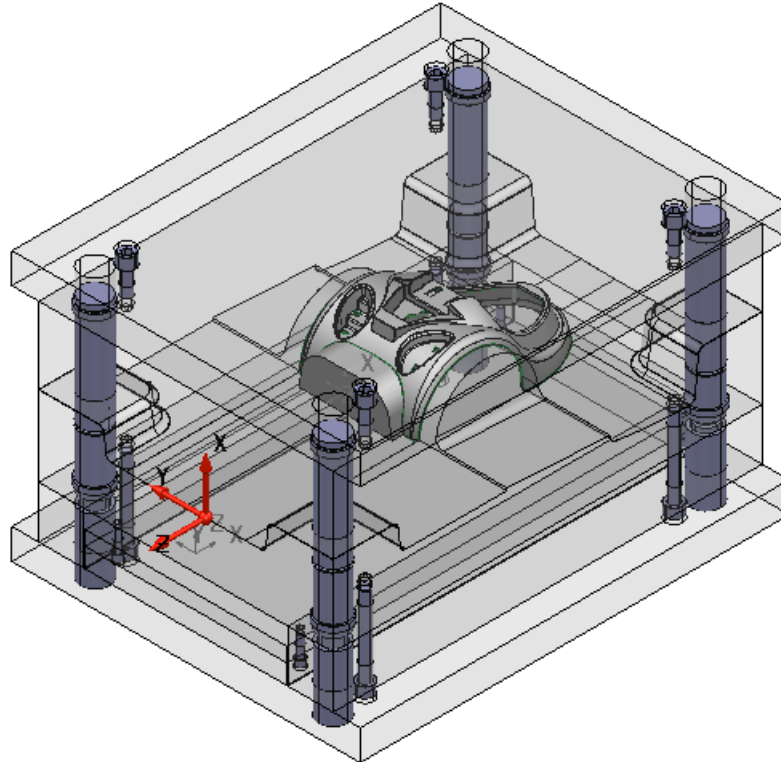
< Back Next > Cancel Help

49 Click **Cancel**.

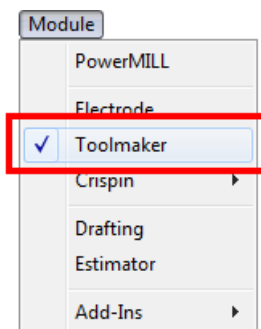
5. Use the Slide Mechanism Wizard

- 1 Click **Import Data (Moldbase_5.psmodel)**.

View the AVI
Import Data ←
Step by step instructions



- 2 Click **Module** from the **Main** menu.
- 3 Make sure ✓ is displayed next to **Toolmaker**.



- 4 If ✓ is not displayed, click on **Toolmaker** to activate the module.

- 5 Click **Wizards** .



The **Slide Wizard** starts. This wizard is used to design the mechanism that removes the slide core and adds it to the mold base.

7 Click the **Design slide mechanisms..** option.

Slide Wizard (1)

☐ Create a slide core...

☐ Register Workplanes and optional pre_modelled slide cores in order to be used to design slide mechanisms...

☒ Design slide mechanisms...

Slide Assembly Creation

- In order to start the Slide Wizard, you must create at least one workplane named "SW_WPn" (where n is 1, 2, 3 etc) using the following conventions:
 - Z is the slide movement axis.
 - X is toward the top of the slide.
 - The origin being on the same plane as the front of the slide to be created.
 - XOZ plane is parallel to OZ axis of DW_WP insert workplane (if you have one).

Press Next to select components for the slide assembly.

< Back Next > Cancel Help

8 Click **Next**.

9 Select Type A.

Slide Wizard (2)

Selected mechanism: 1

☒ **Preview all** Refresh Preview

Clear dimensions: Clear

Delete assembly: Delete

Copy dimensions: Copy...

Slide type selection

Type

☒ **A**

☐ B

☐ C

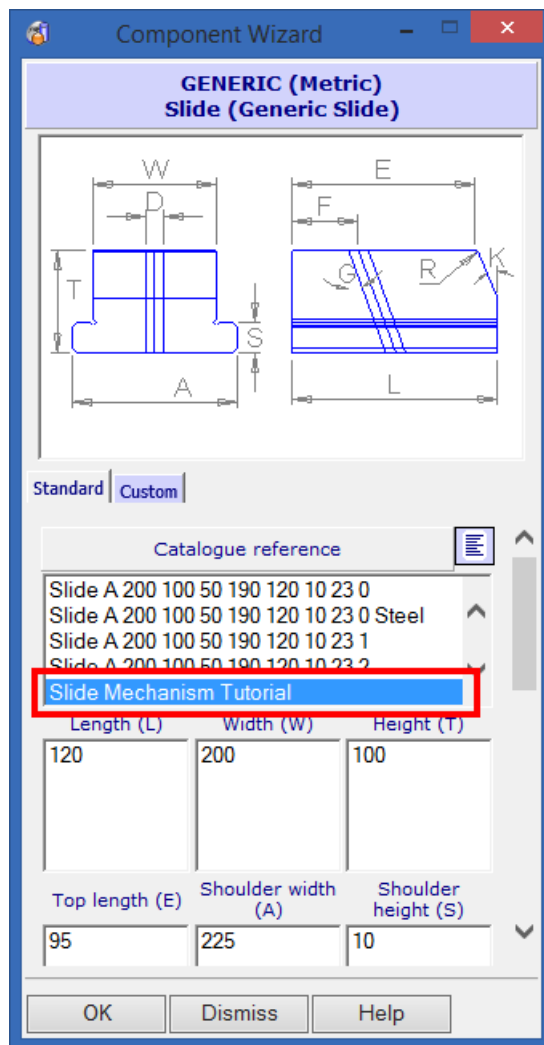
< Back Next > Cancel Help

10 Click Next.

The **Component Wizard** is displayed.

11 Select Slide Mechanism Tutorial from the Catalog Reference.

This contains predefined sizes to fit the model.



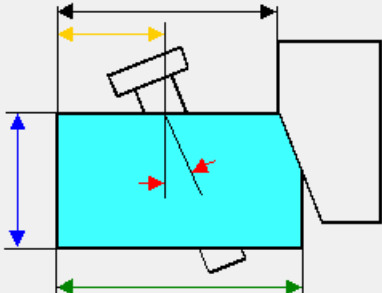
12 Click **OK**.

The **Slide Wizard** remains displayed in the Browser

Slide Wizard (3)

Selected mechanism: 1

☒ **Preview all** Refresh Preview



Click on component to display its dimensions.

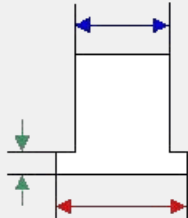
Get slide dimensions...

Slide Bottom Length	120
Slide Top Length	95
Slide Height	100
Hole Centre Position	40
Hole Clearance	0.1
Hole Diameter	28.1
Pin angle	20
Heel block angle	23

< Back Next > Cancel Help

13 Scroll down the wizard and change the **Vertical Offset** to **-10**.

Hole Centre Position	40
Hole Clearance	0.1
Hole Diameter	28.1
Pin angle	20
Heel block angle	23

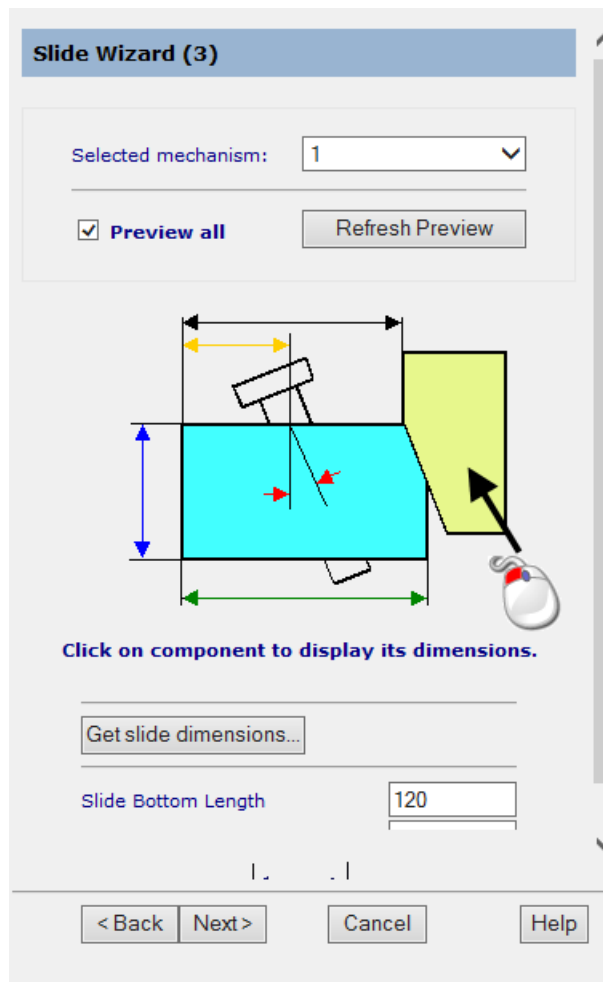


Slide Shoulder Width	225
Slide Shoulder Height	10
Slide Top Width	200
Horizontal Offset	0
Vertical Offset	-10

Component details...

< Back Next > Cancel Help

- 14 Scroll back up the wizard and click on the **Heel block**, shown below:

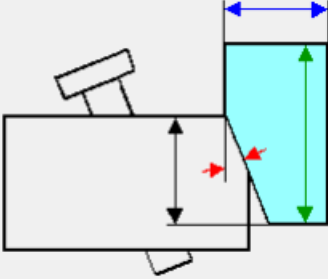


The **Heel Block** page of the wizard is displayed.

Slide Wizard (3)

Selected mechanism: 1

☒ **Preview all** Refresh Preview



Click on component to display its dimensions.

☐ No Heel Block
☒ **Heel Block Component**
☐ Machined Directly Heel Block

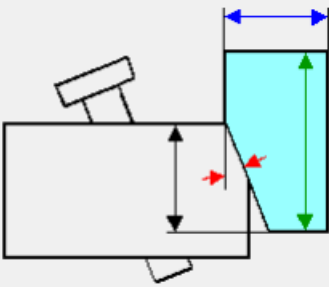
☐ **Align with moldbase**

Heel Block Top Length	100
Heel Block Angle	23
Heel Block recess	0
Heel Block Height	100
Heel Block Edge Height	100
Heel Block Width	200

< Back Next > Cancel Help

15 Change the **Heel Block Edge Height** to **50**.

☒ **Preview all** Refresh Preview



Click on component to display its dimensions.

☐ No Heel Block
☒ **Heel Block Component**
☐ Machined Directly Heel Block

☐ Align with moldbase

Heel Block Top Length	100
Heel Block Angle	23
Heel Block recess	0
Heel Block Height	100
Heel Block Edge Height	50
Heel Block Width	200

Component details...

☐ Insert a wear plate

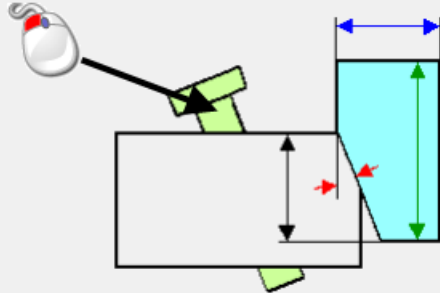
< Back Next > Cancel Help

- 16 Scroll back up in the wizard and click on the angle pin shown below:

Slide Wizard (3)

Selected mechanism: 1

☒ Preview all Refresh Preview



Click on component to display its dimensions.

☐ No Heel Block
☒ Heel Block Component
☐ Machined Directly Heel Block

☐ Align with moldbase

Heel Block Top Length	100
Heel Block Angle	23
Heel Block recess	0
Heel Block Height	100
Heel Block Edge Height	50
Heel Block Width	200

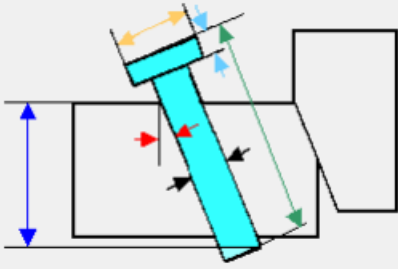
< Back Next > Cancel Help

The **Angle Pin** page of the wizard is displayed.

Slide Wizard (3)

Selected mechanism: 1

☒ **Preview all** Refresh Preview



Click on component to display its dimensions.

Number of angle pins: ☐ 0 ☐ 1 ☒ 2

Distance between the pins axes 109.85

Angle Pin Length	200
Pin Angle	20
Angle Pin Diameter	28
Angle Pin Head Thickness	28
Angle Pin Head Diameter	56
Hole Diameter	28.1
Effective Height	70.478
Slide Travel	0

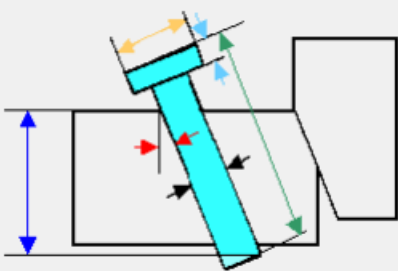
< Back Next > Cancel Help

17 Scroll down in the wizard, and click **Number of angle pin(s) 2**.

18 Enter the values shown in the image below:

Selected mechanism: 1

☒ Preview all Refresh Preview



Click on component to display its dimensions.

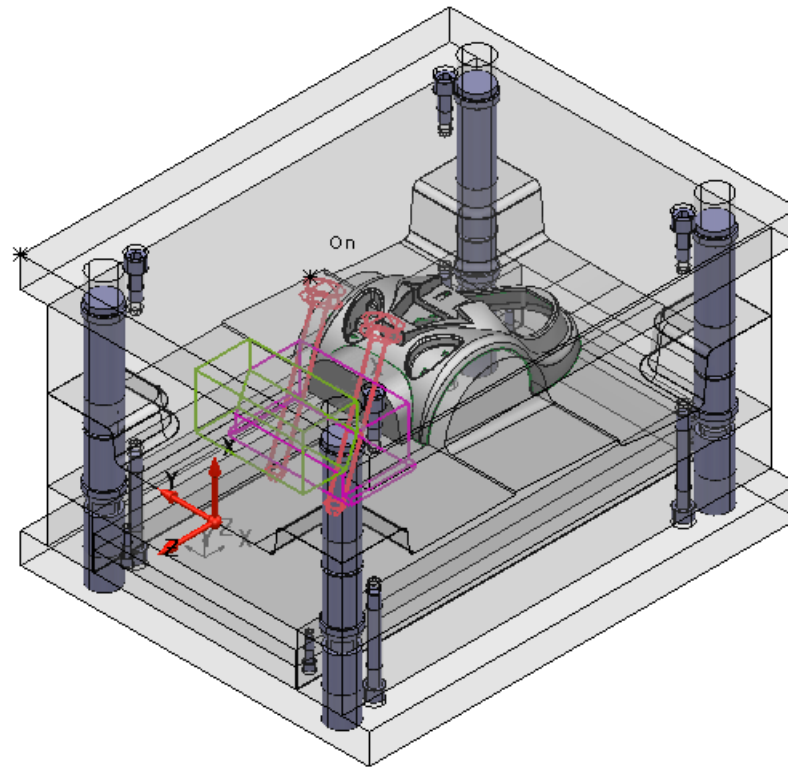
Number of angle pins: ☐ 0 ☐ 1 ☒ 2

Distance between the pins axes	110
Angle Pin Length	275
Pin Angle	20
Angle Pin Diameter	28
Angle Pin Head Thickness	28
Angle Pin Head Diameter	56
Hole Diameter	28.1
Effective Height	140.955
Slide Travel	50.405
Day Light	500

Component details...

< Back Next > Cancel Help

A preview of the slide mechanism is shown on the model.



19 Click **Next**.

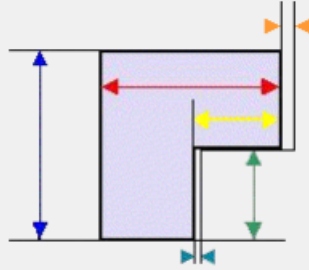
20 Scroll down and select the **Insert a wear plate** option.

Slide Wizard (4)

Selected mechanism: 1

☒ **Preview all** Refresh Preview

☒ **Insert guide rails**



Length 195
Width 25.1
Height 20
Cut Width 12.6
Cut Height 10
Shoulder clearance 0.1
Contact clearance 0
Position offset 0

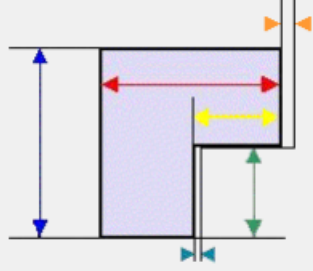
Component details...

☐ **Insert a wear plate**

< Back Next > Cancel Help

- 21 Change the values in the wizard to match the image shown below:

☒ **Insert guide rails**



Length	200
Width	35
Height	80
Cut Width	12.6
Cut Height	30
Shoulder clearance	0.1
Contact clearance	0
Position offset	0

[Component details...](#)

☒ **Insert a wear plate**

Wear Plate Length	200
Wear Plate Thickness	10
Wear Plate Width	225.2

☒ Limit wearplate width to the guide rails
☐ Limit guide rails height to the top of the wearplate



< Back Next > Cancel Help

22 Click **Next**.

Slide Wizard (5)

Selected mechanism: 1

☒ **Preview all** Refresh Preview

Slide Pocket

☒ **Create pocket for slide assembly**

Options : ☐ **Blind** ☒ **Through**

Side Clearance 0

< Back Next > Cancel Help

23 Select **Blind** in the **Slide Pocket** options.

Slide Wizard (5)

Selected mechanism: 1

☒ **Preview all** Refresh Preview

Slide Pocket

☒ **Create pocket for slide assembly**

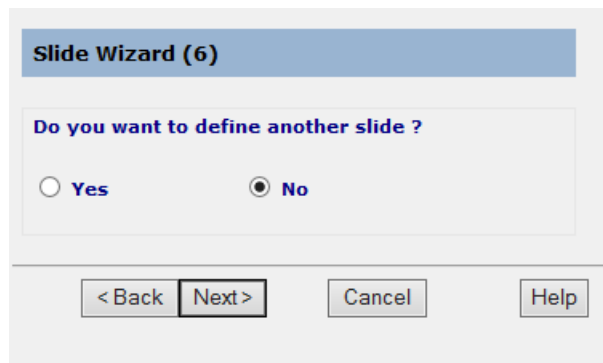
Options : ☒ **Blind** ☐ **Through**

Length 220

Side Clearance 0

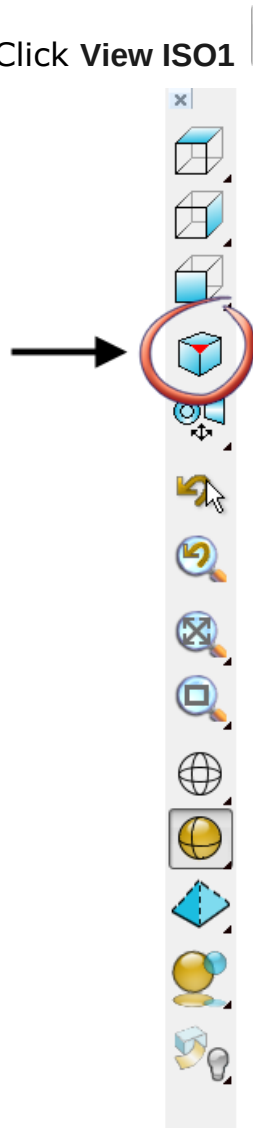
< Back Next > Cancel Help

24 Click **Next**.

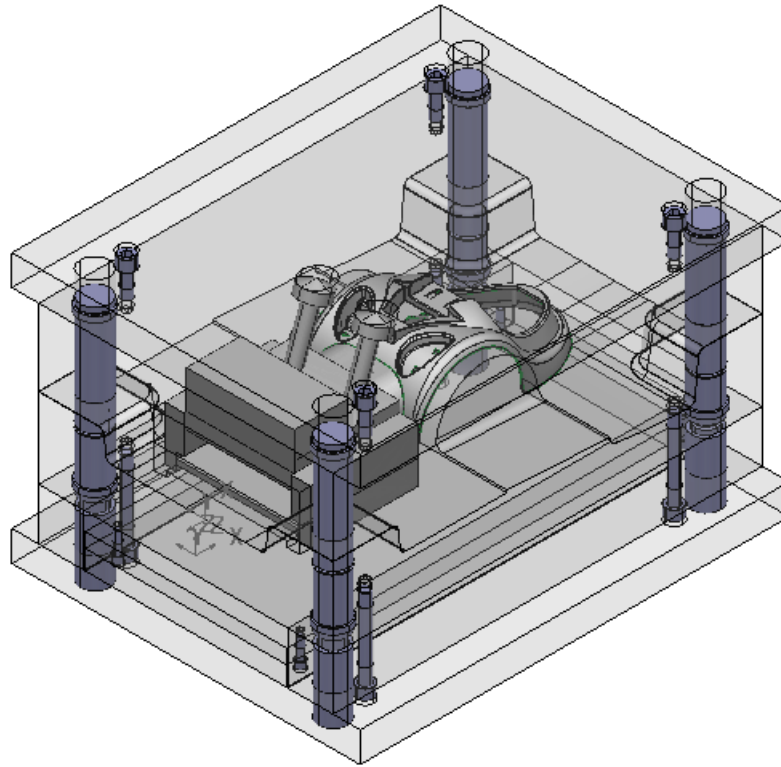


25 Click Next.

26 Click **View ISO1** .



Your model should look like the one shown below:

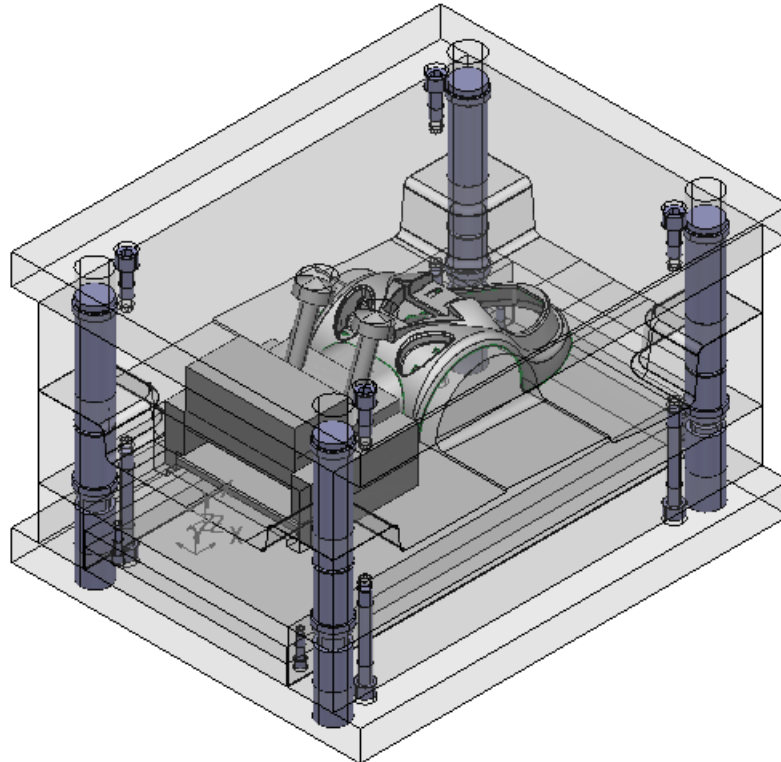


Creating cooling holes

6. Use the Cooling Wizard

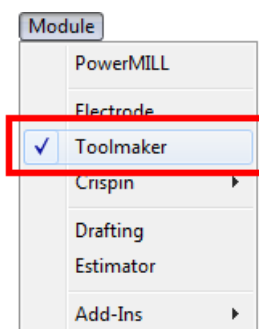
- 1 Click **Import Data (Moldbase_6.psmodel)**.

[View the AVI](#)
[Import Data](#) ←
[Step by step instructions](#)



*Make sure the **World** workplane is selected.*

- 2 Click **Module** from the **Main** menu.
- 3 Make sure ✓ is displayed next to **Toolmaker**.



- 4 If ✓ is not displayed, click on **Toolmaker** to activate the module.

- 5 Click **Wizards** .

- 6 Click **Start Cooling Wizard** .

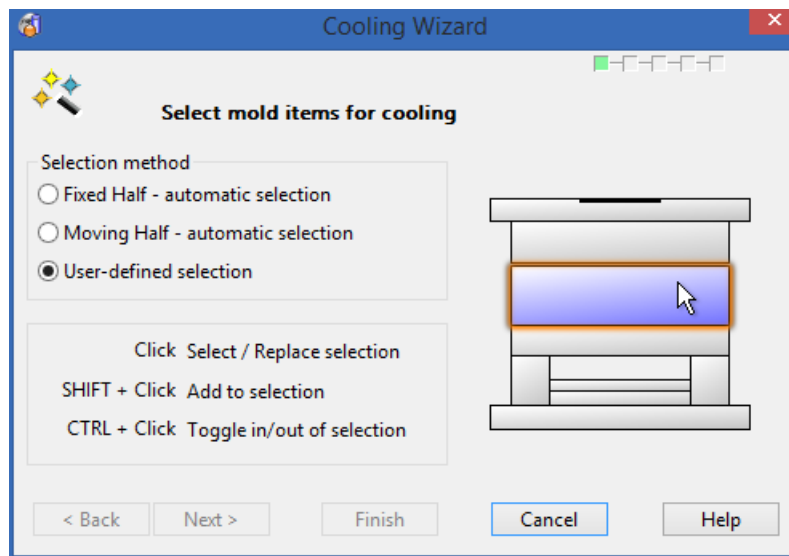


- 7 The **Cooling Wizard** starts.

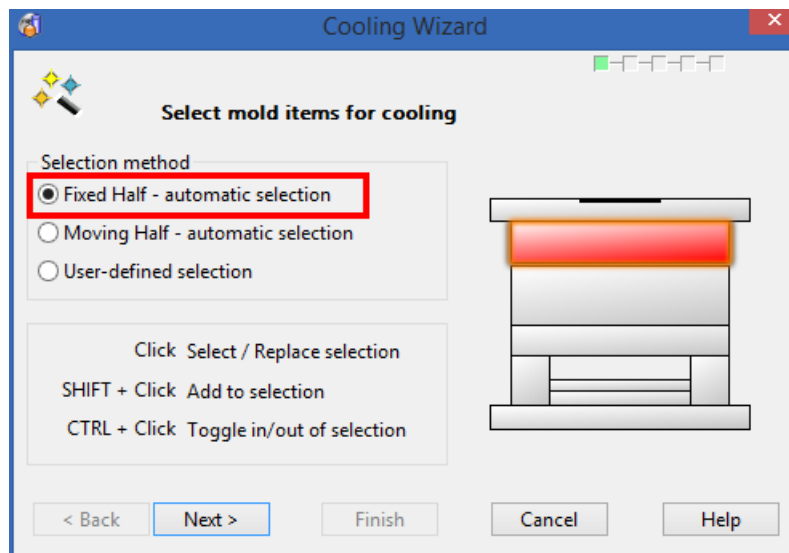
The **Cooling Wizard** is used to define the layout and dimensions of the holes for the cooling system.



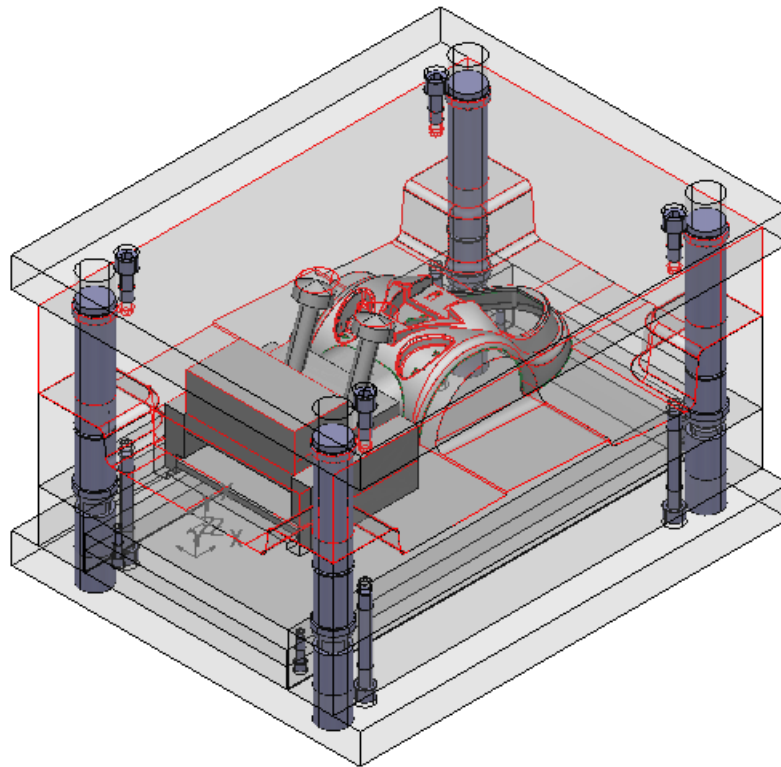
Use this page of the wizard to select the plates where the cooling holes will be created.



8 Select the **Fixed Half - automatic selection** option.



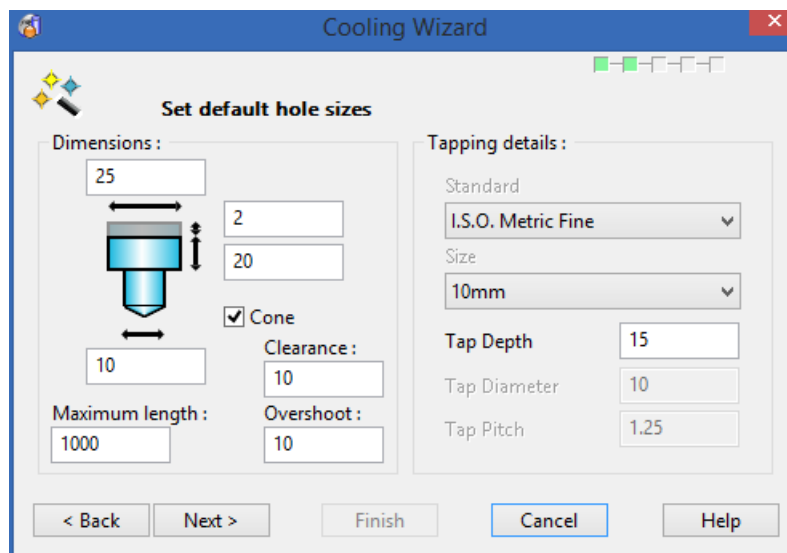
The cavity plate is selected.



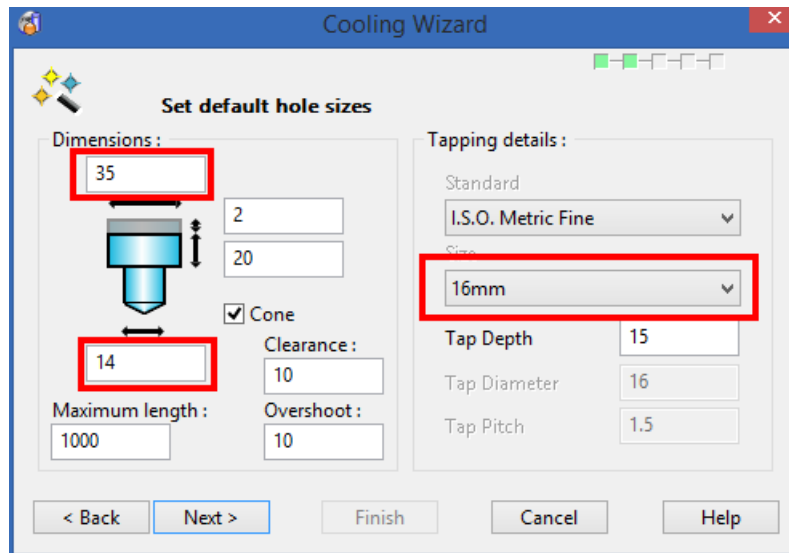
9 Click **Next**.



This page of the wizard is where the hole types are selected.



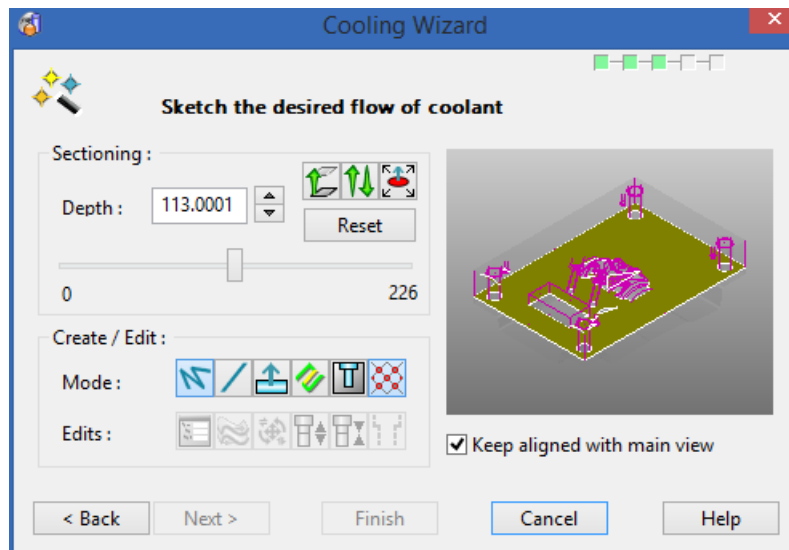
10 Change the values to match the wizard shown below:



11 Click **Next**.



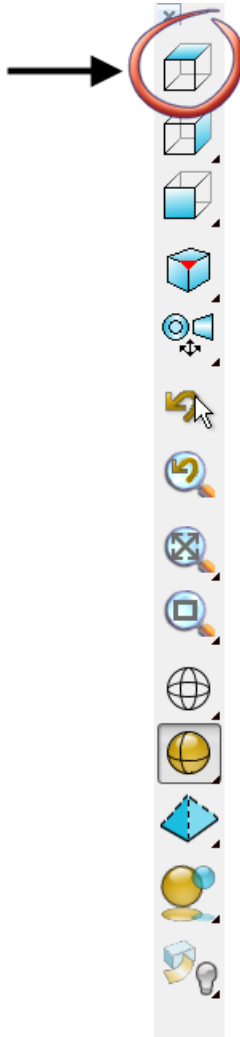
This page of the wizard is where you define the layout of the holes.



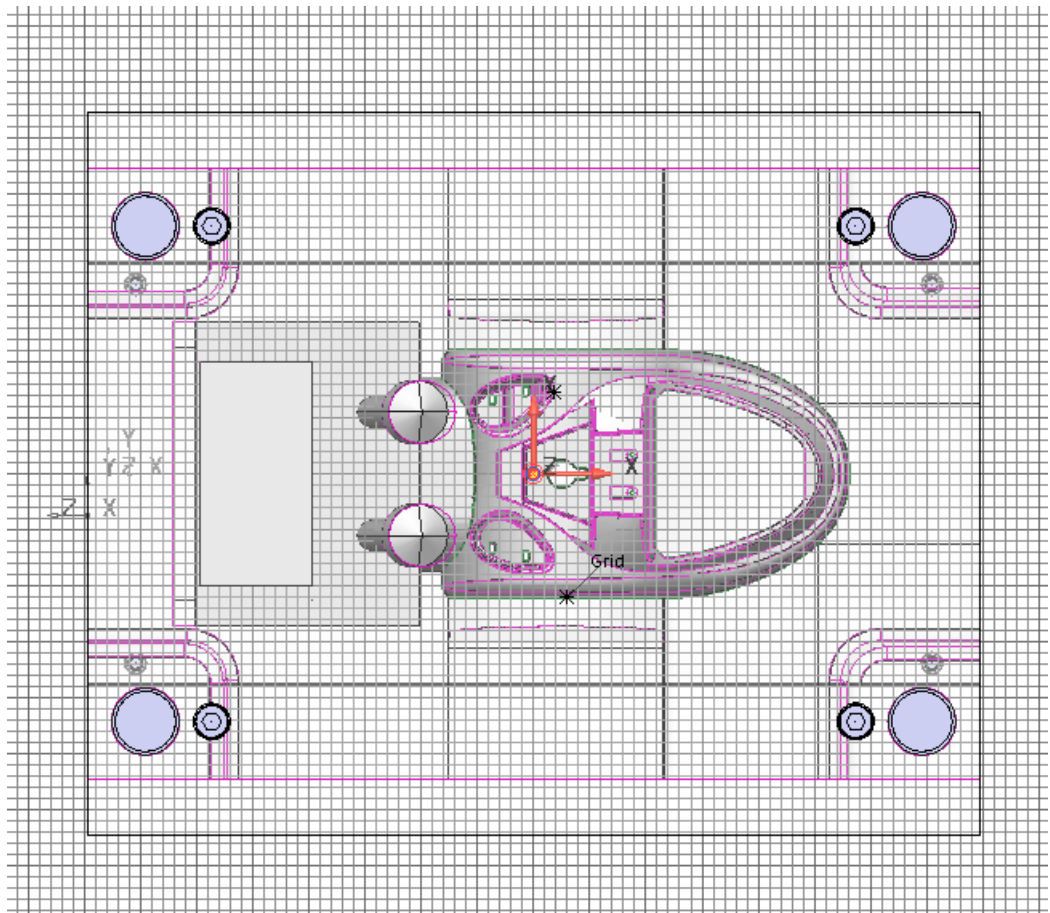
12 Enter a **Depth** of 145.

The cooling track is now sketched over the plate.

13 Click **View from Top** .

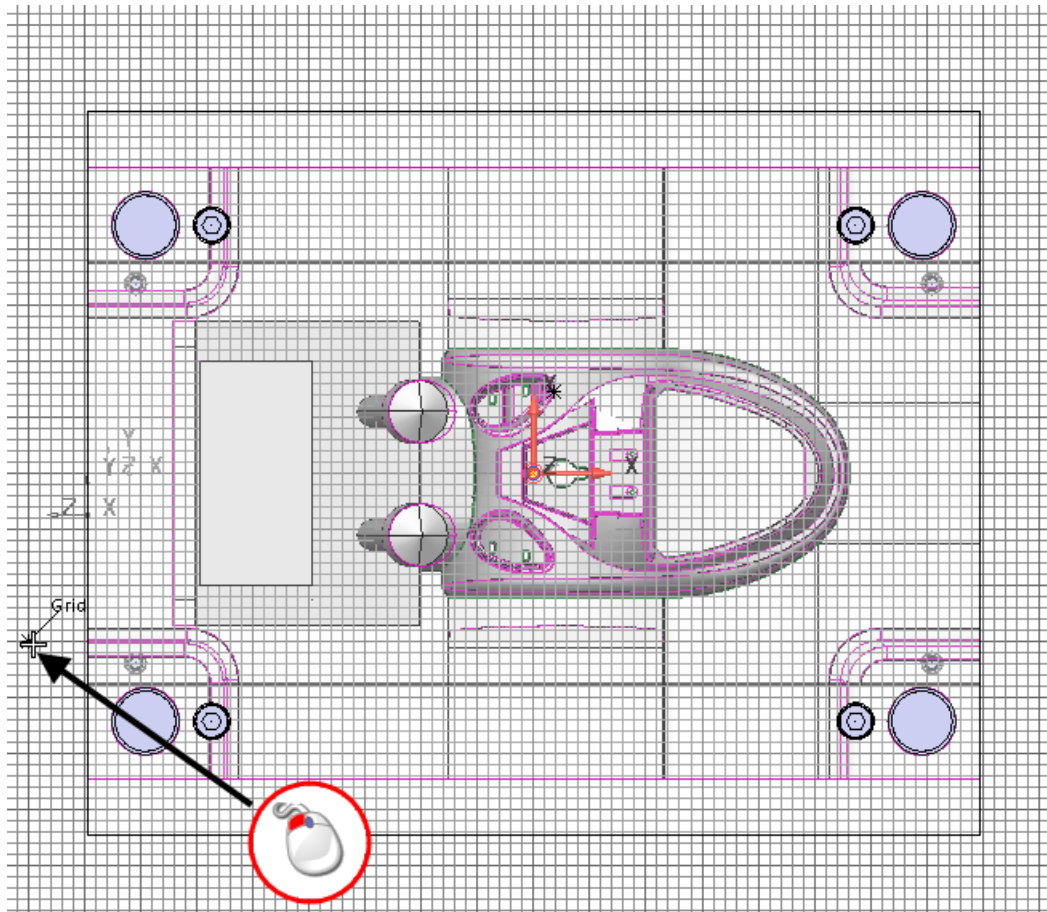


Your model should look like the one shown below:



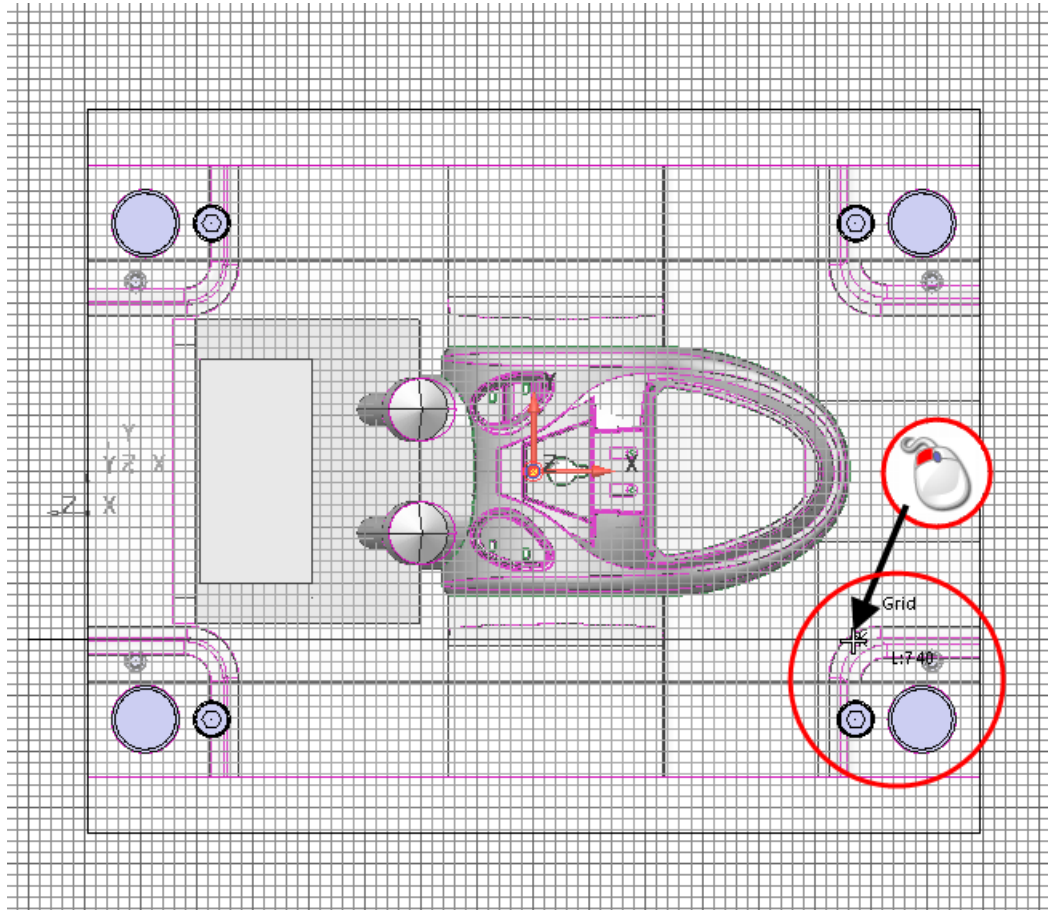
- 14** Move the cursor over the model at approximately the position shown in the image below.

- 15** When **Grid** is displayed and **-450 -150 0** is displayed in the status bar, click with the left mouse button.



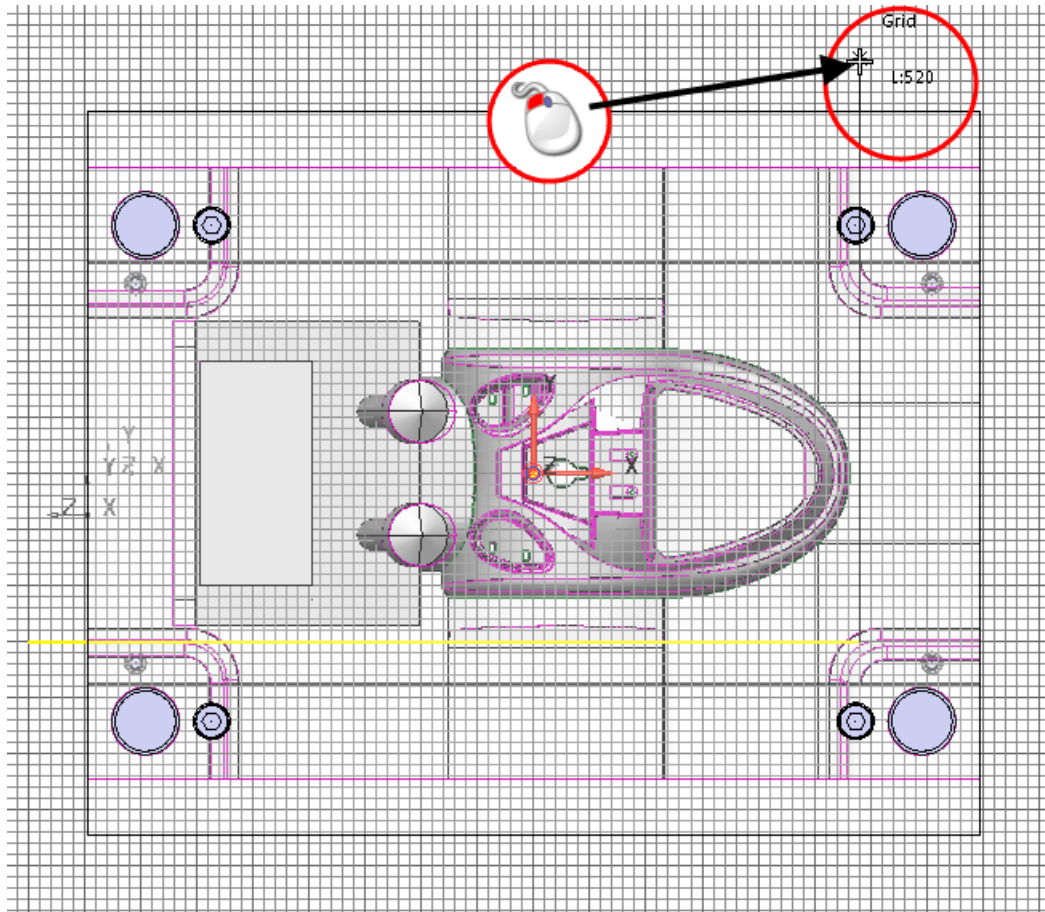
- 16** Move the cursor over the model at approximately the position shown in the image below.

- 17** When the cursor displays **Grid, 740** and **290 -150 0** in the status bar., click with the left mouse button.



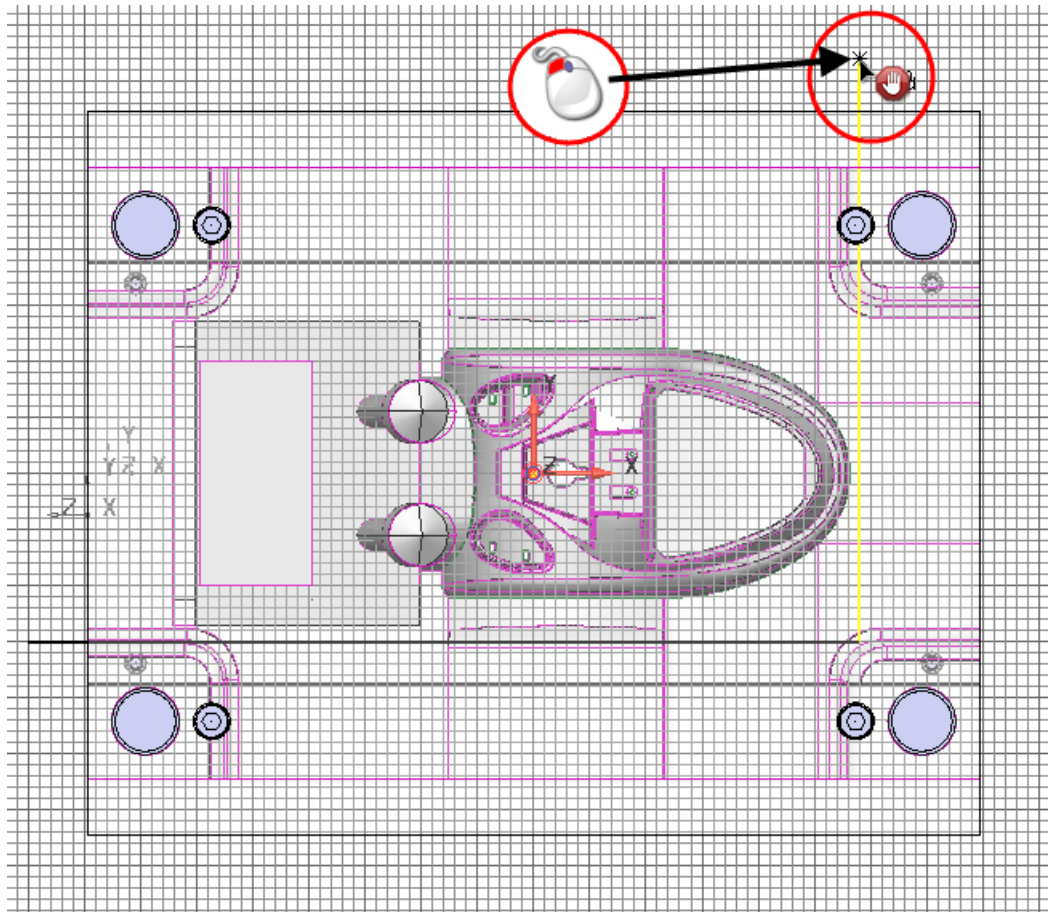
- 18** Move the cursor over the model at approximately the position shown in the image below.

- 19 When the cursor displays **Grid** and **520**, click with the left mouse button.



- 20 Move the cursor over the last point entered.

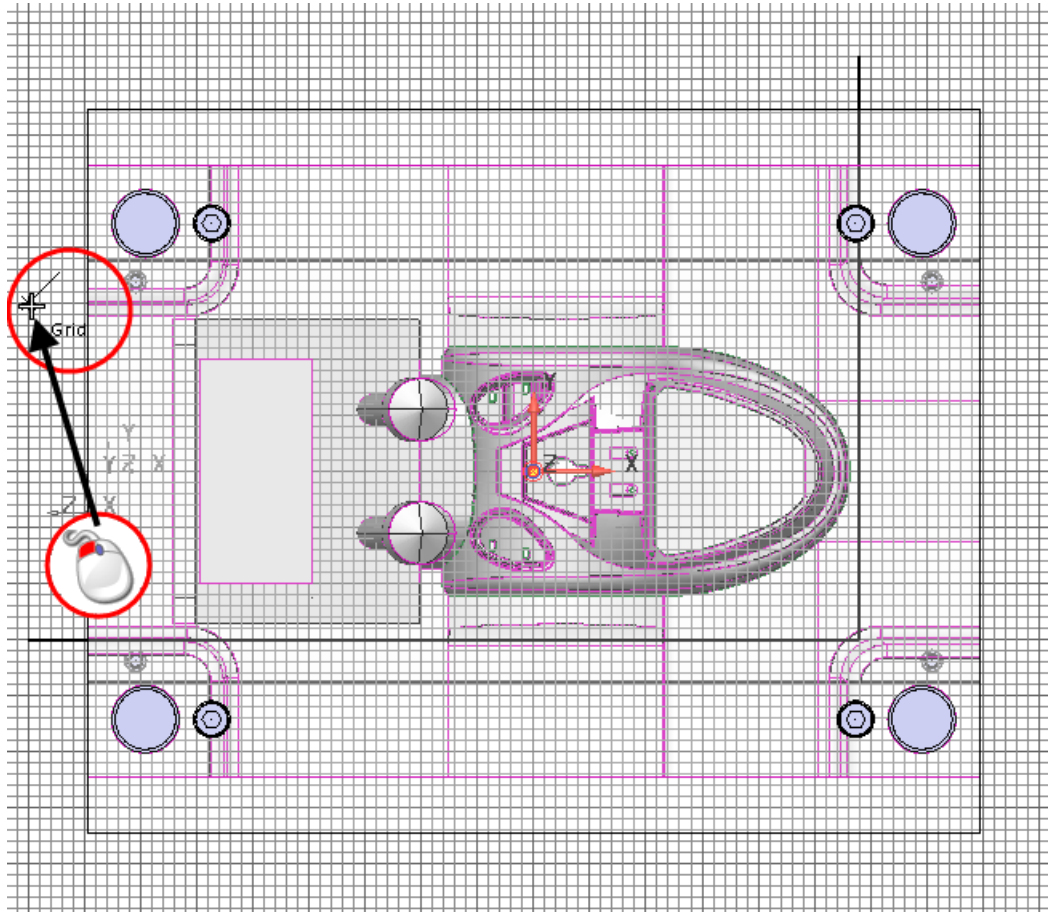
- 21** When the cursor displays **L:0** and the stop sign, click with the left mouse button.



This finishes the line. A new line can now be created anywhere.

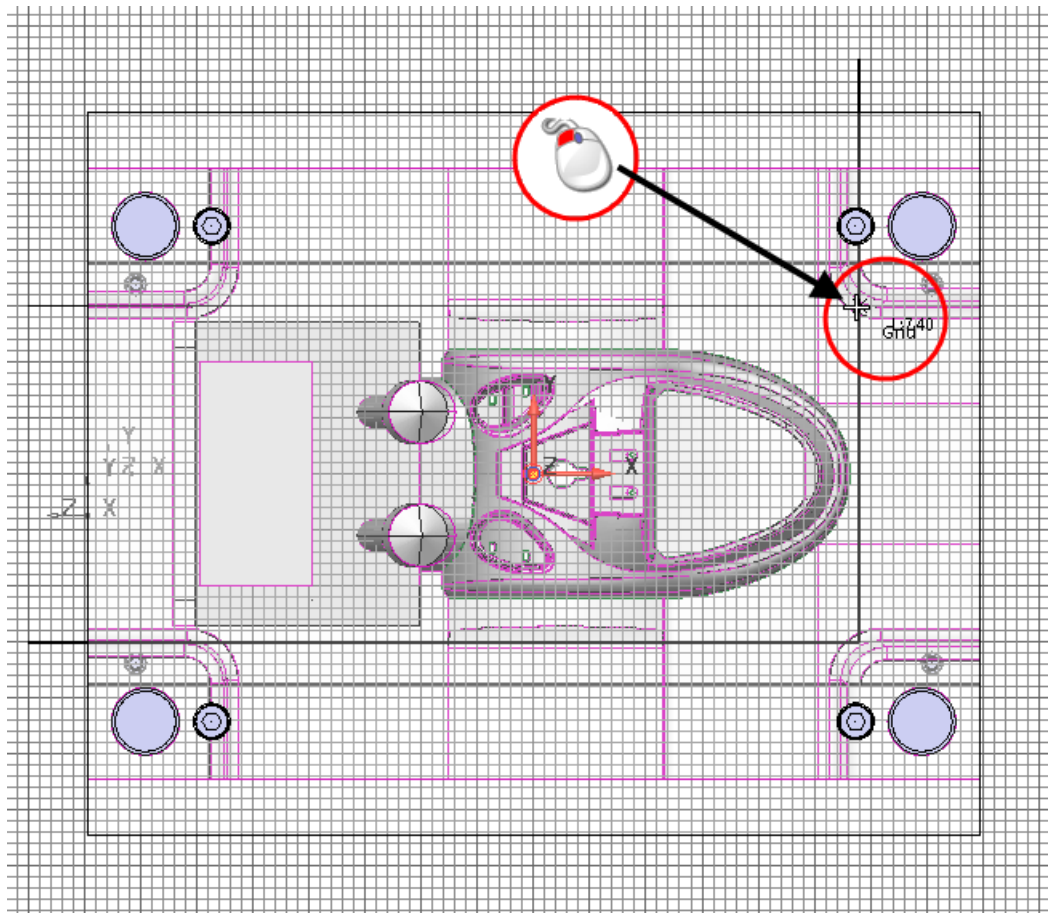
- 22** Move the cursor over the model at approximately the position shown in the image below.

- 23 When the cursor displays **Grid** and **-450 150 0** in the status bar, click with the left mouse button.



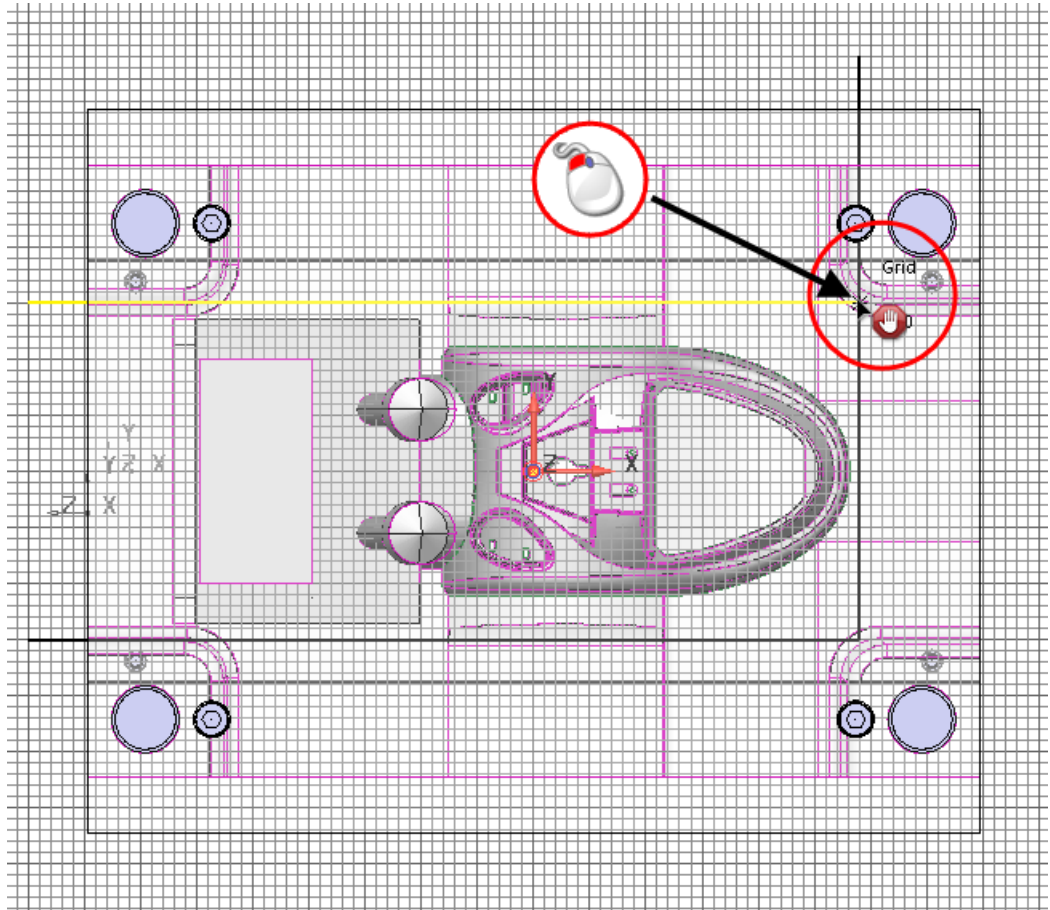
- 24 Move the cursor over the model at approximately the position shown in the image below.

25 Click with the left mouse button.



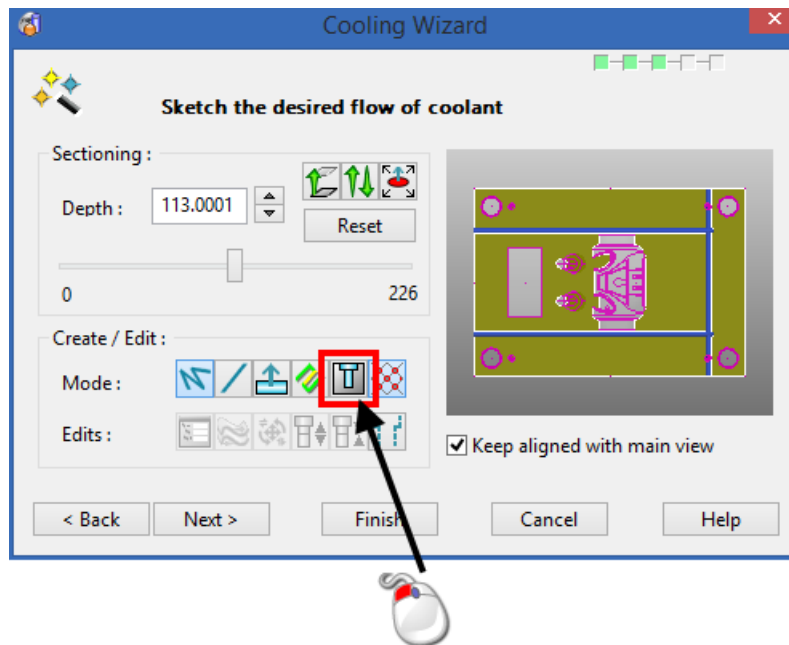
26 Move the cursor over the last point entered.

- 27 When the cursor displays L:0 and the stop sign, click with the left mouse button.

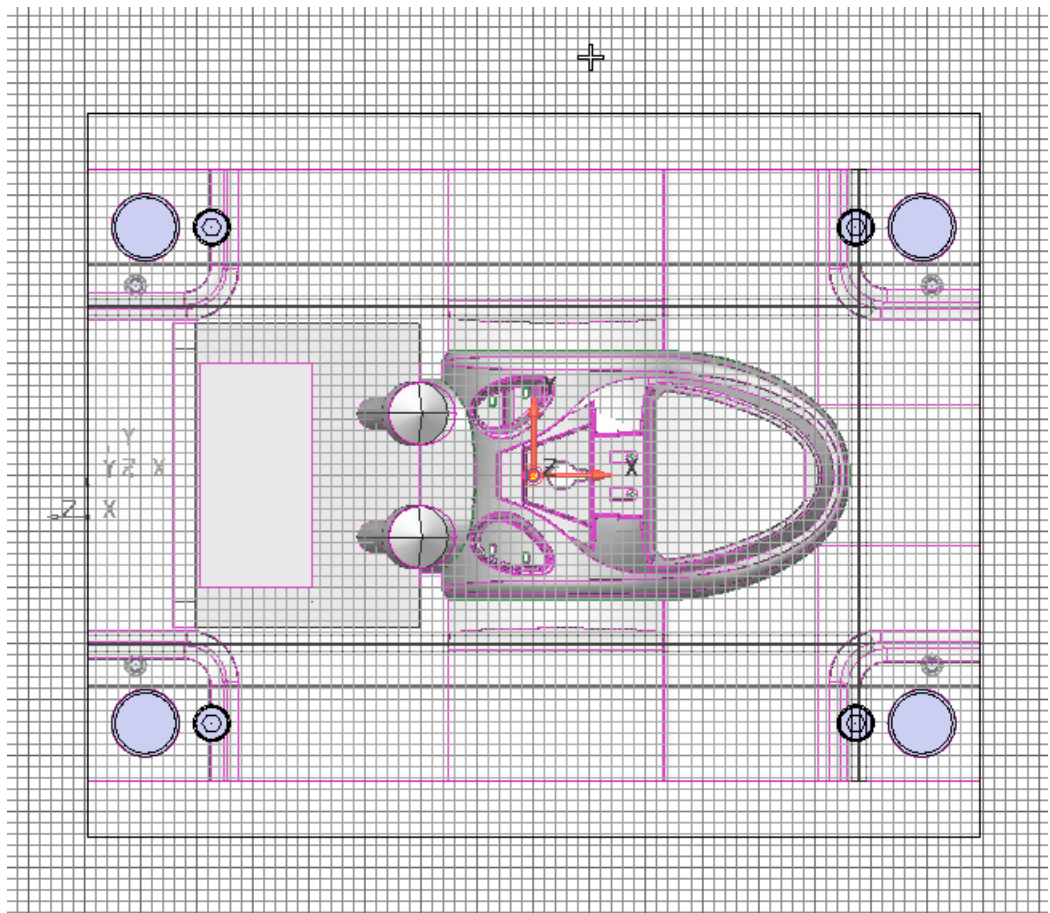


Rotate the view to make sure that the lines you create do not touch the pillars or the model in the middle of the plate.

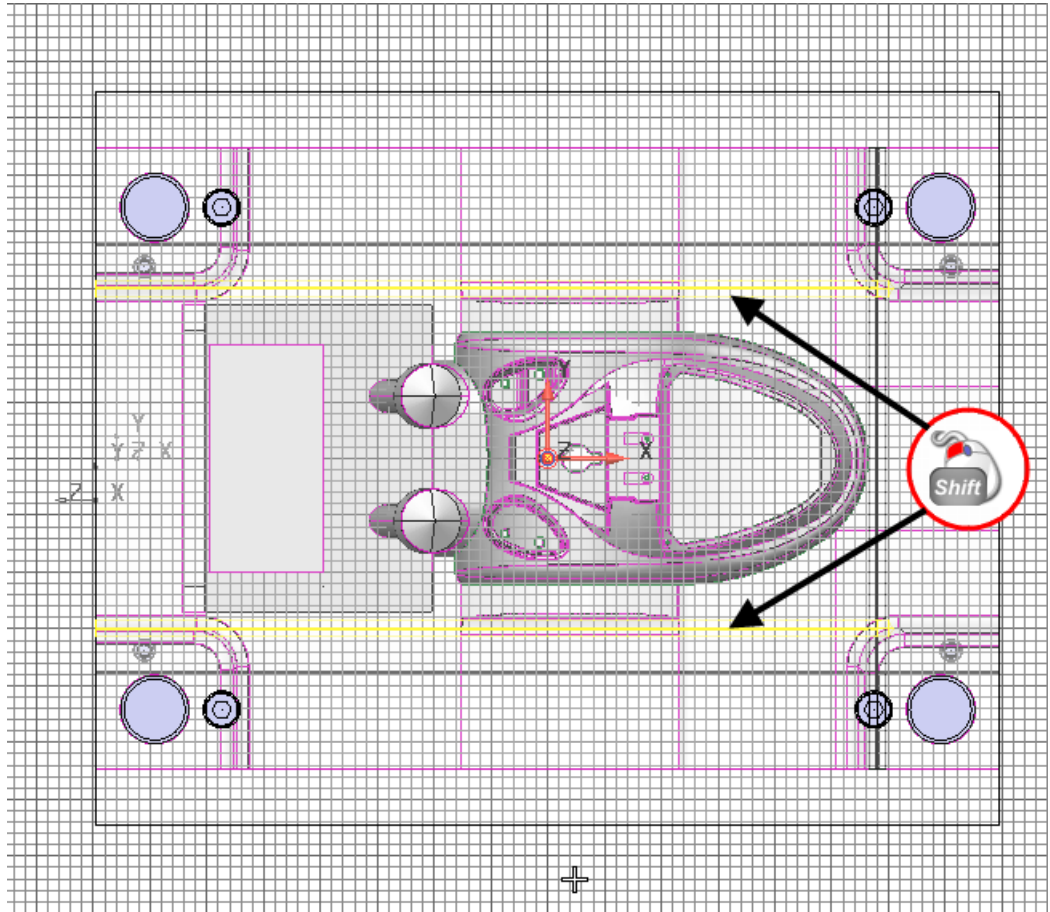
28 Click **Edit Cooling Holes** .



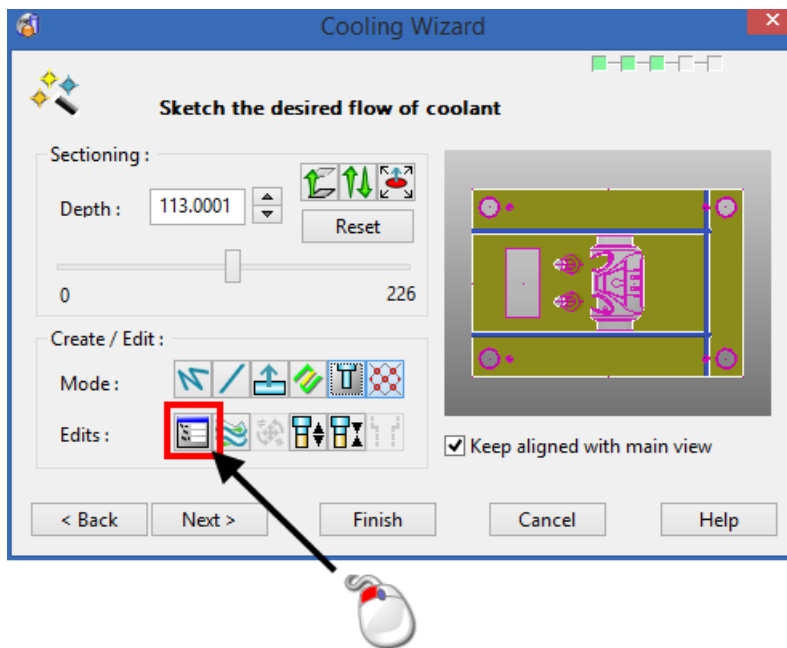
The holes are drawn on the model.



- 29 Click the two horizontal lines that were created whilst holding down the shift key so that both holes are selected.



- 30 Click **Raise editing form** .



The **Edit selected Hole(s)** dialog is displayed.

Edit Selected Hole(s)

Hole use

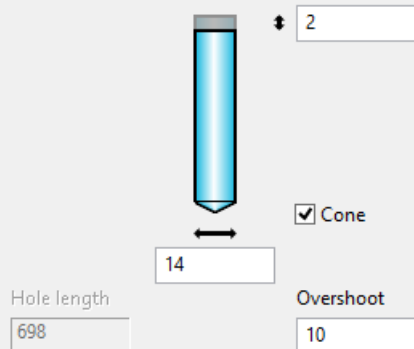
Start : ☒ Cooling

End : ☐ Cooling

☐ Keep start and end the same

Split point depth 698

Dimensions



Hole length 698

14

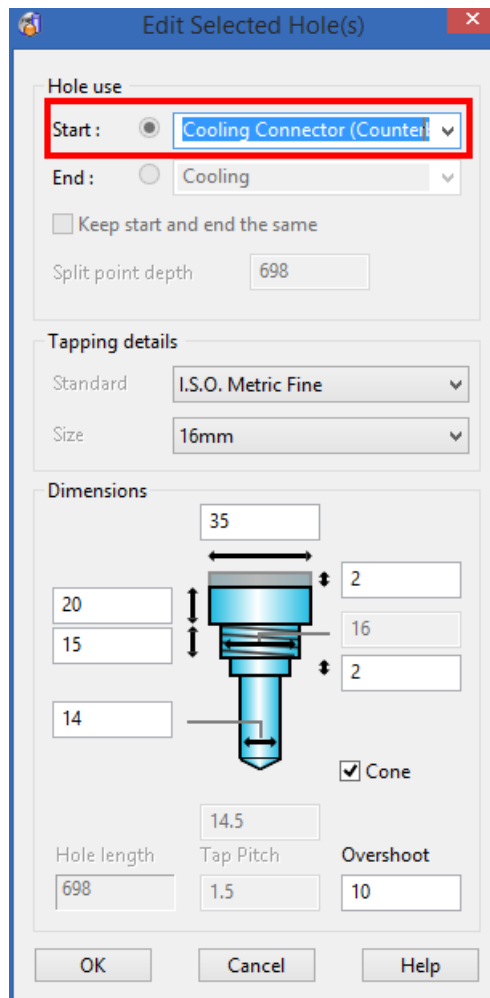
2

☒ Cone

Overshoot 10

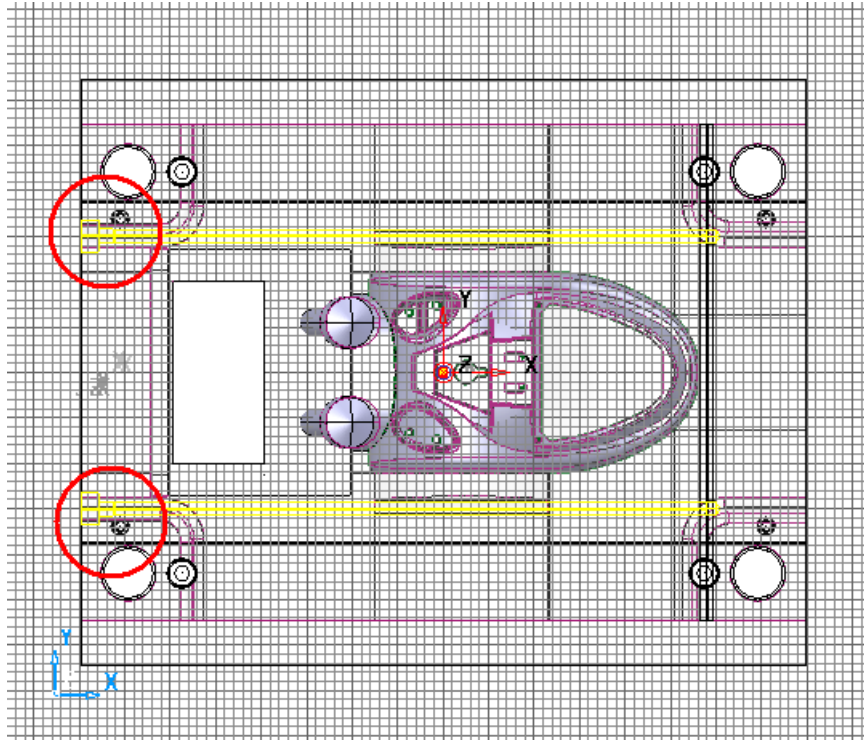
OK Cancel Help

- 31 From the **Start** drop down list, select the **Cooling Connector (Counterbored With Tapped)** option.



- 32 Click **OK**.

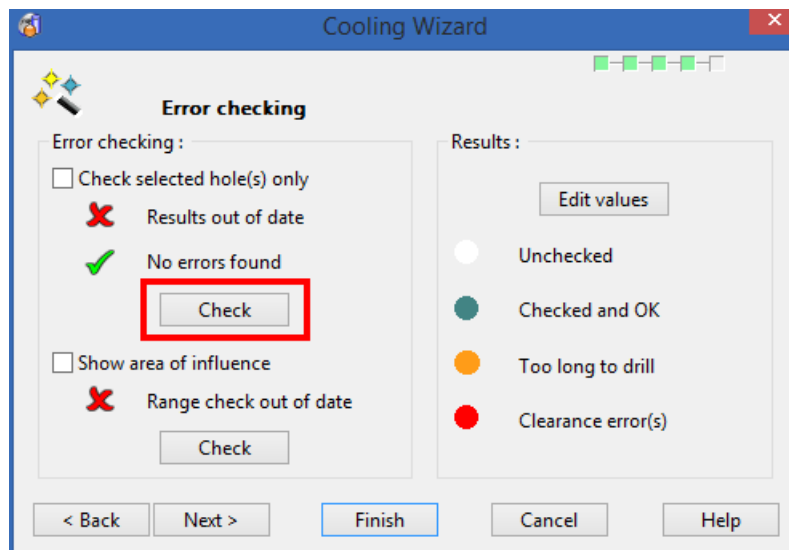
The two holes are now drawn with **Cooling Connector (Counterbored With Tapped)** holes.



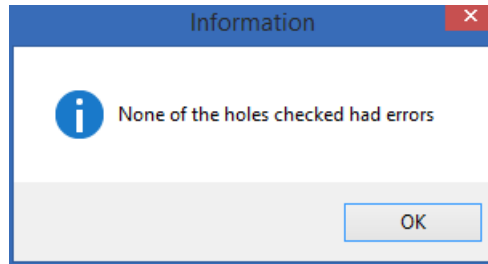
33 Click **Next**.

The cooling holes can now be checked to see if they collide with any other geometry and edited if they do.

34 Click **Check**, shown in the image below:



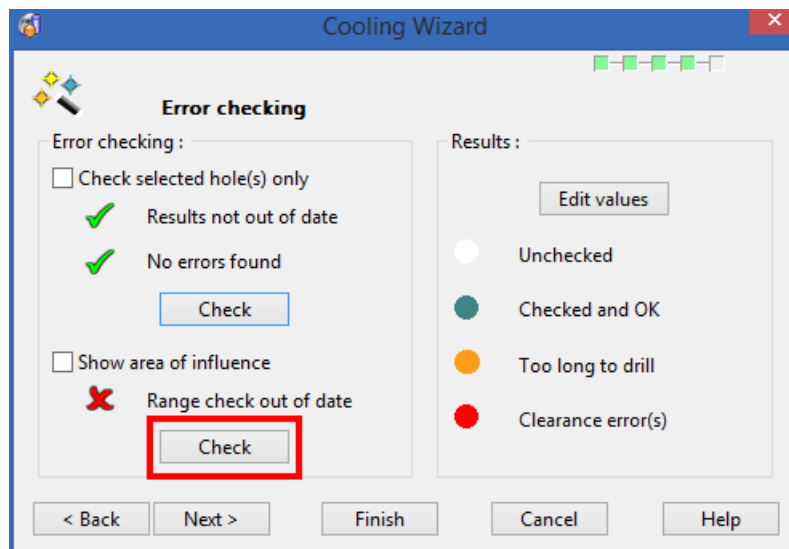
- 35 A message is displayed reporting that none of the holes had errors.



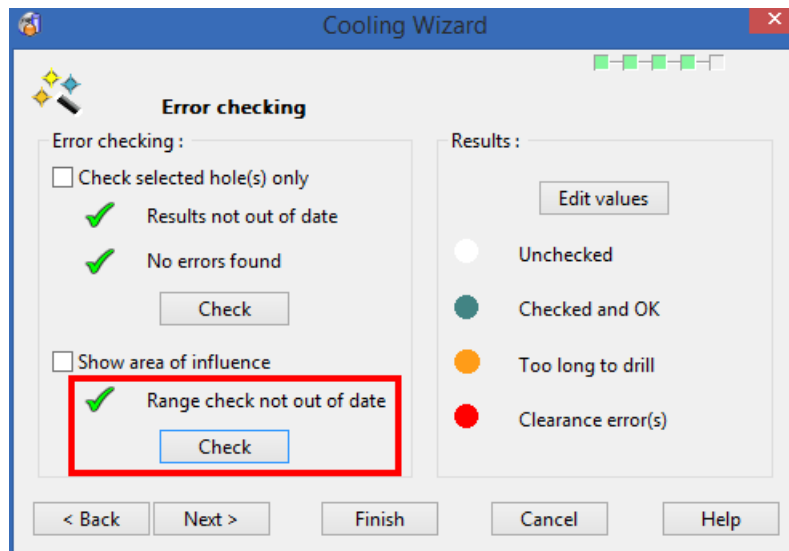
If any cooling holes are reported with errors, go Back in the Wizard to edit the layout of the cooling holes to make sure they do not touch the pillars or the model.

- 36 Click **OK**.

- 37 Click **Check**, shown in the image below:



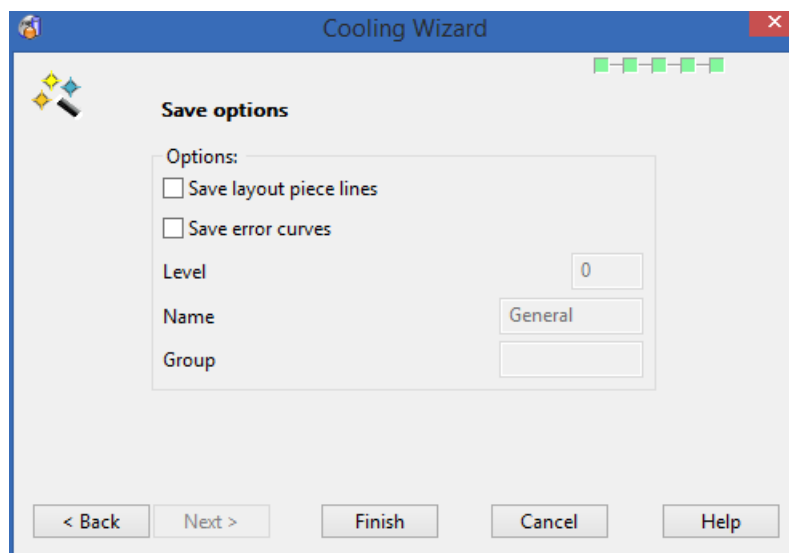
The cross  icon changes to a tick  icon.. This indicates there are no problems with the holes.



38 Click **Next**.

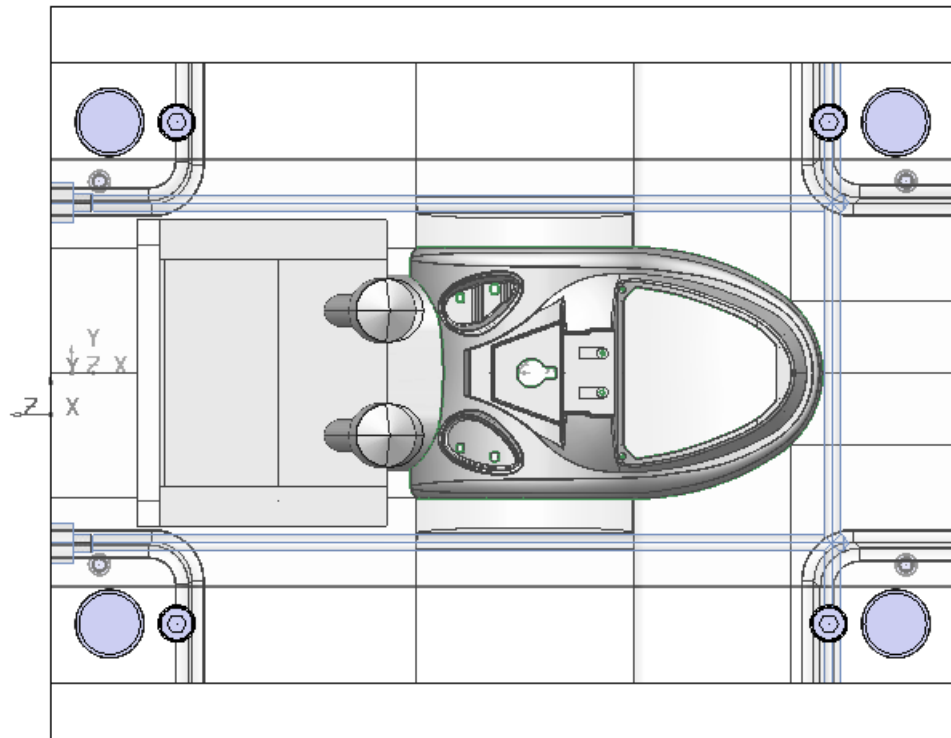


Use the options on this page of the wizard to save the error curves and the layout of the cooling holes. These can be used to make changes to the mold base if required.



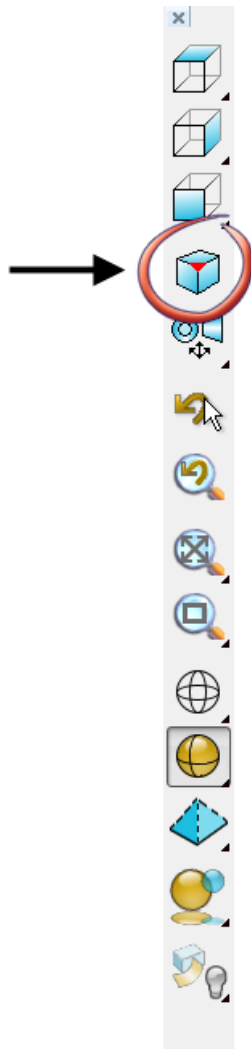
39 Click **Finish**.

40 Your model should look like the one shown below:

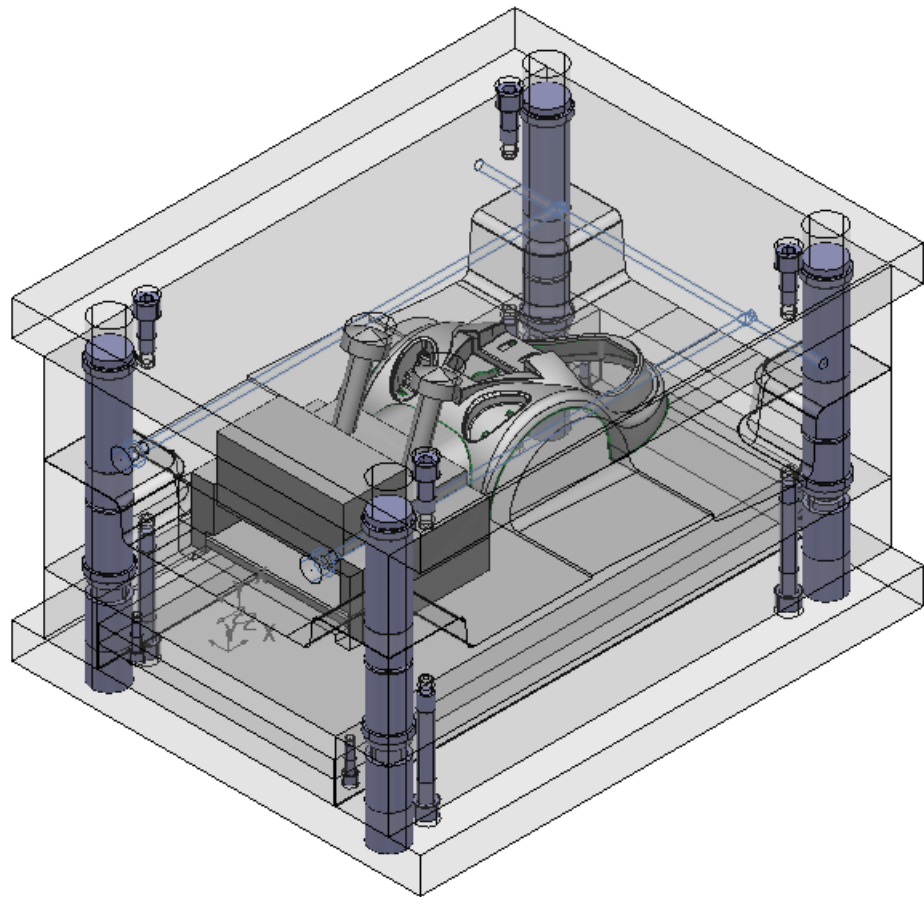


41 Change the view to see all of the mold base.

42 Click **View ISO1** .



Your model should look like the one shown below:

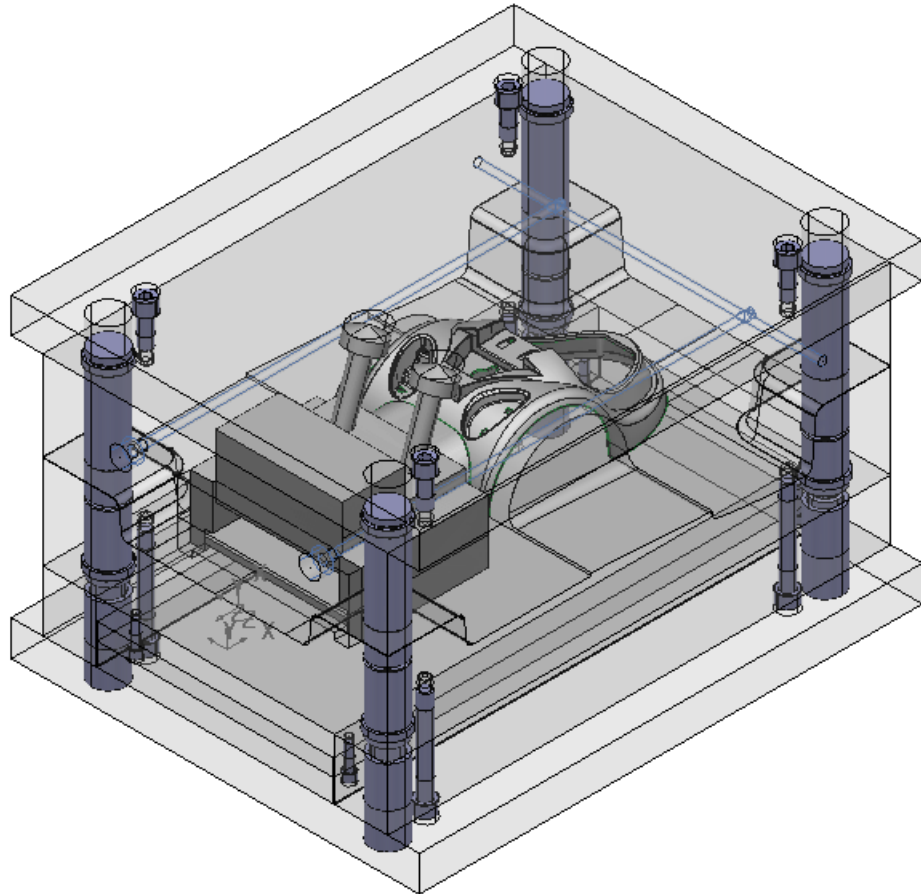


Creating Components

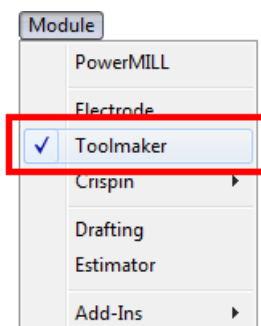
7. Use the Component Wizard

- 1 Click **Import Data (Moldbase_7.psmodel)**.

[View the AVI](#)
[Import Data](#) ←
[Step by step instructions](#)



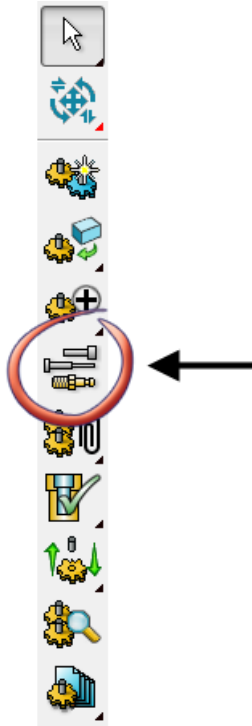
- 2 Click **Module** from the **Main** menu.
- 3 Make sure ✓ is displayed next to **Toolmaker**.



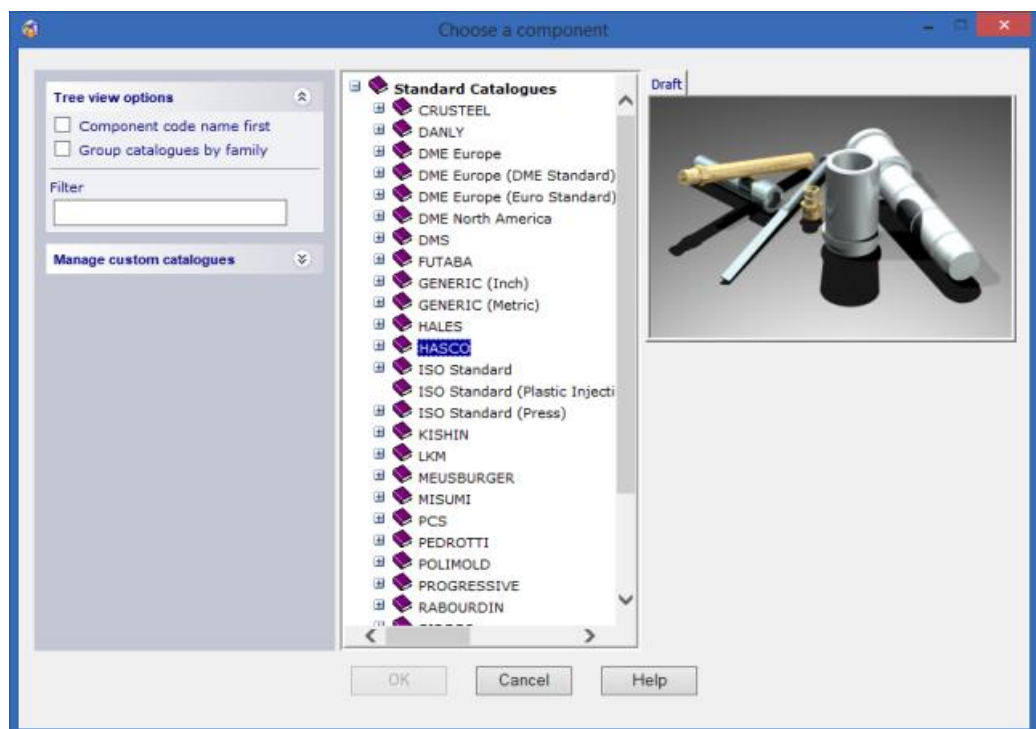
- 4 If ✓ is not displayed, click on **Toolmaker** to activate the module.

5 Click **Assembly** .

6 Click **Component Wizard** .



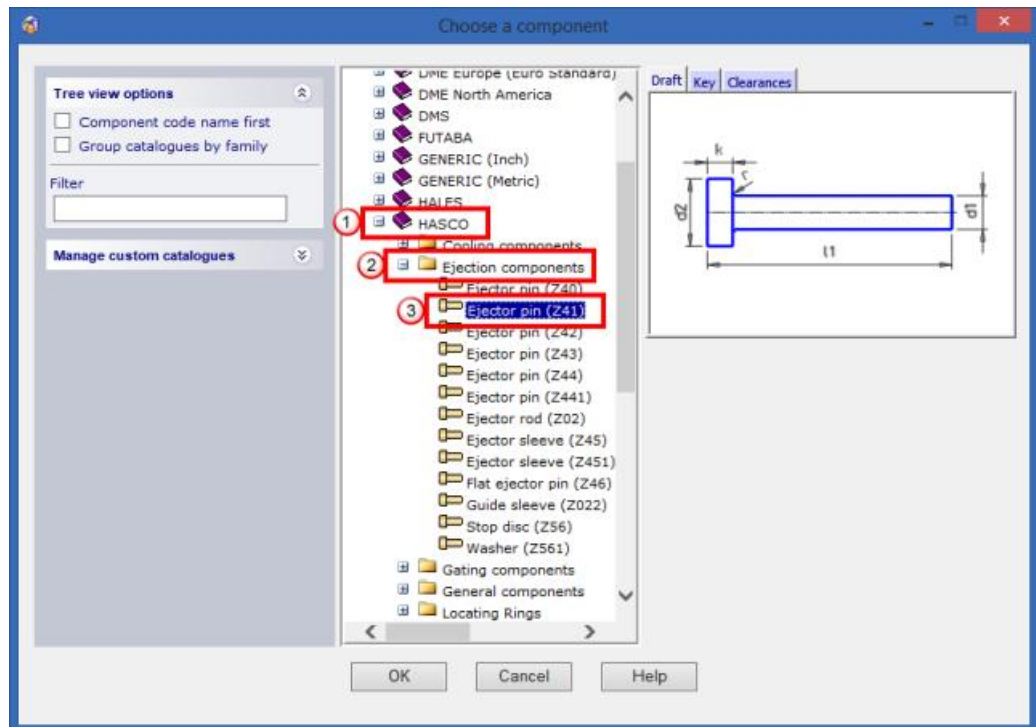
The **Component Wizard** starts and the **Choose a component** dialog is displayed.



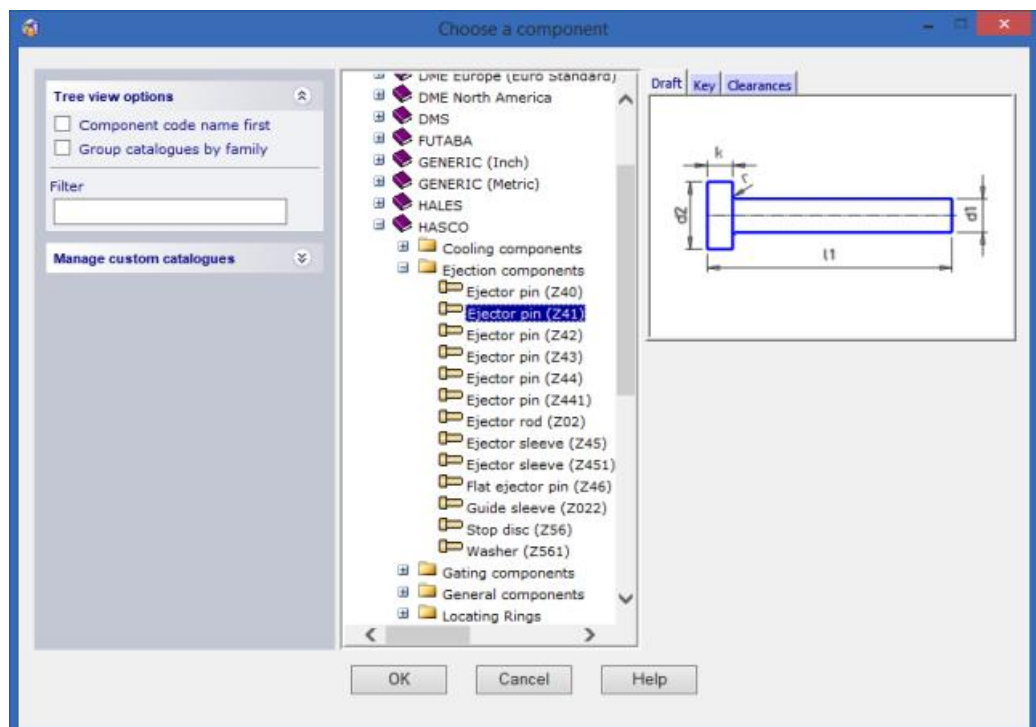
7 Do the following:

① Select **HASCO** from the **Standard Catalogs**.

- ② Click  to expand Ejection components.
- ③ Select Ejector pin (Z41).



- 8 The Ejector pin (Z41) component is displayed, shown in the image below:

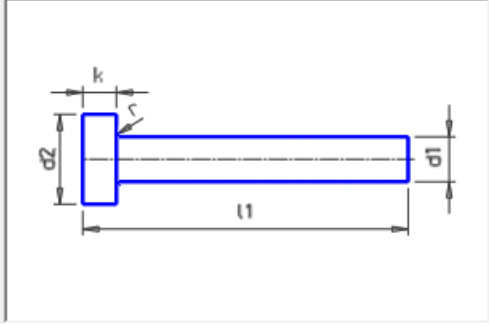


- 9 Click **OK**.
- 10 Do the following:
 - ① Select a **Shank Diameter** of **8**.

- ② Select **500** for the **Length**.

Component Wizard

**HASCO
Ejector pin (Z41)**



Standard | Custom | **Key & Trim** | Clearances

Catalogue reference

Z41/8x500

Shank diameter (d1)	Length (l1)
8	250
8.2	315
8.5	400
9	500
10	630

More Parameters >>

Function: Ejector pin

☒ Position the component

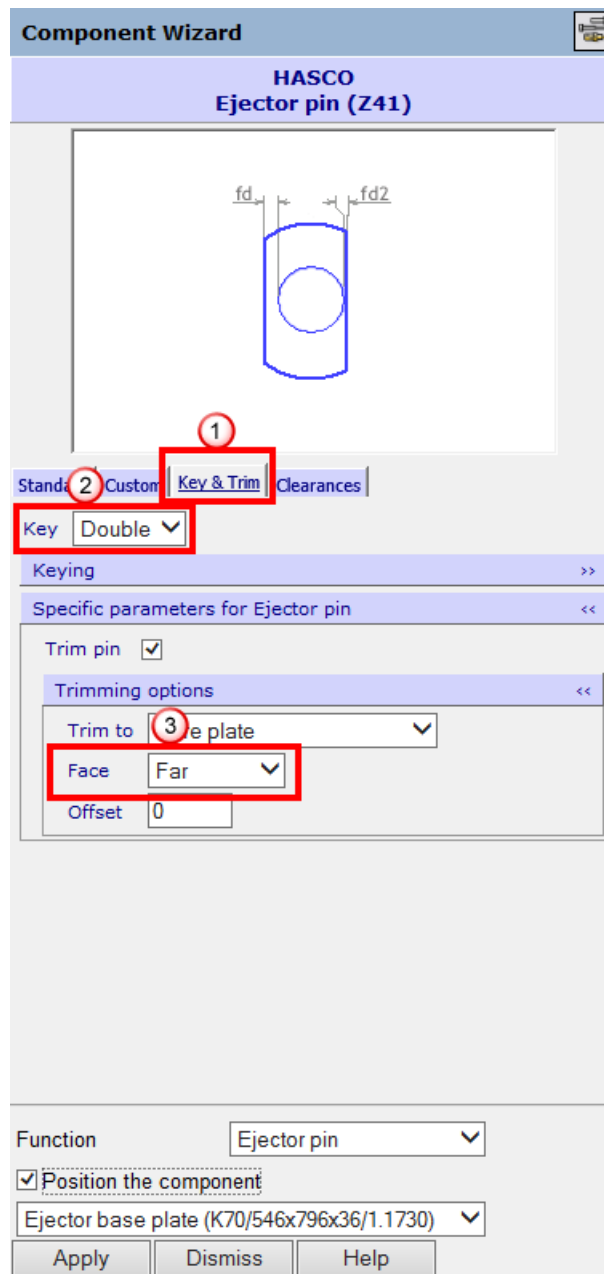
Ejector base plate (K70/546x796x36/1.1730)

Apply Dismiss Help

11 Do the following:

- ① Select the **Key & Trim** tab.
- ② Select **Double** from the **Key** drop down list.

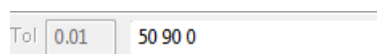
- ③ Select **Far** from the **Face** drop down list.



- 12 Click **Apply**.

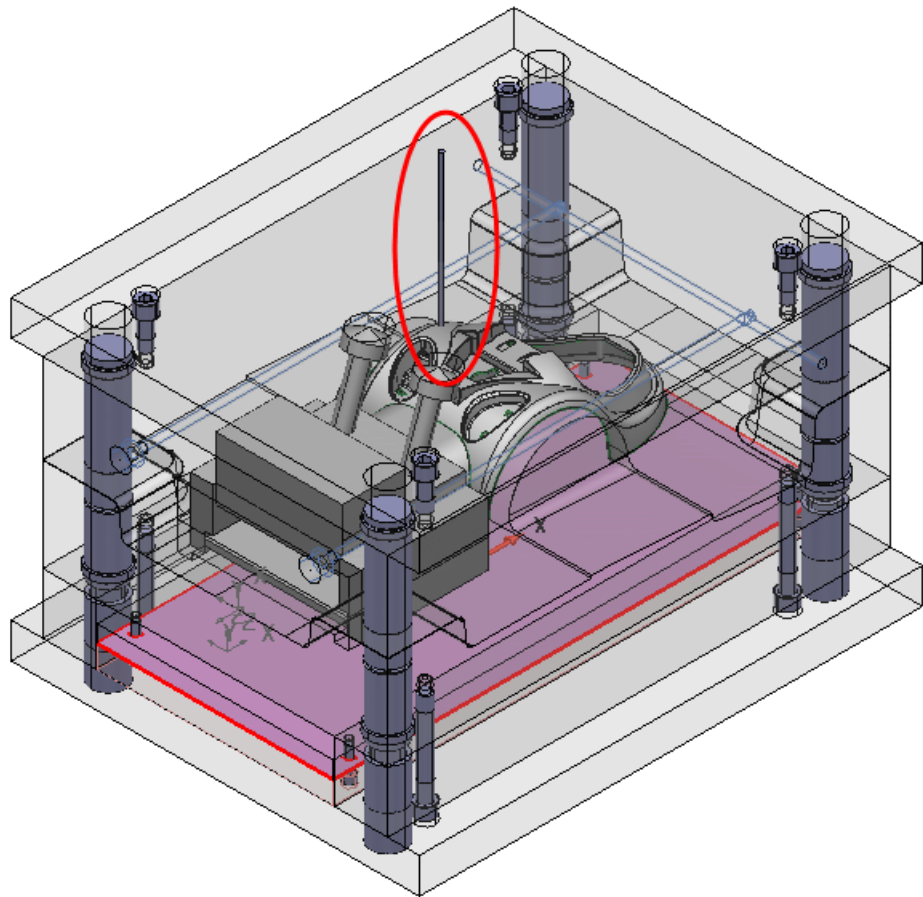
- 13 Click in the **Command Input** box in the **Status Bar** and type:

50 90 0

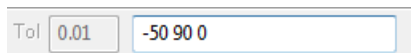


- 14 Press **Enter**.

A pin is created on the model.

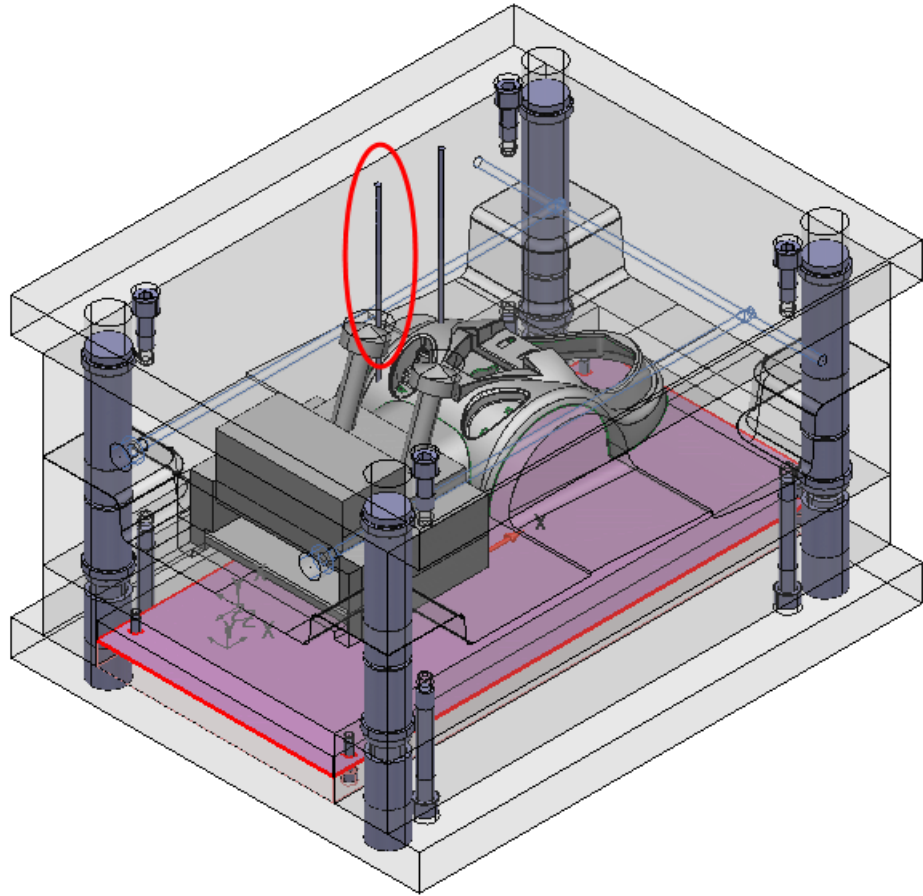


- 15** Click in the **Command Input** box in the **Status Bar** and type:
-50 90 0



- 16** Press **Enter**.

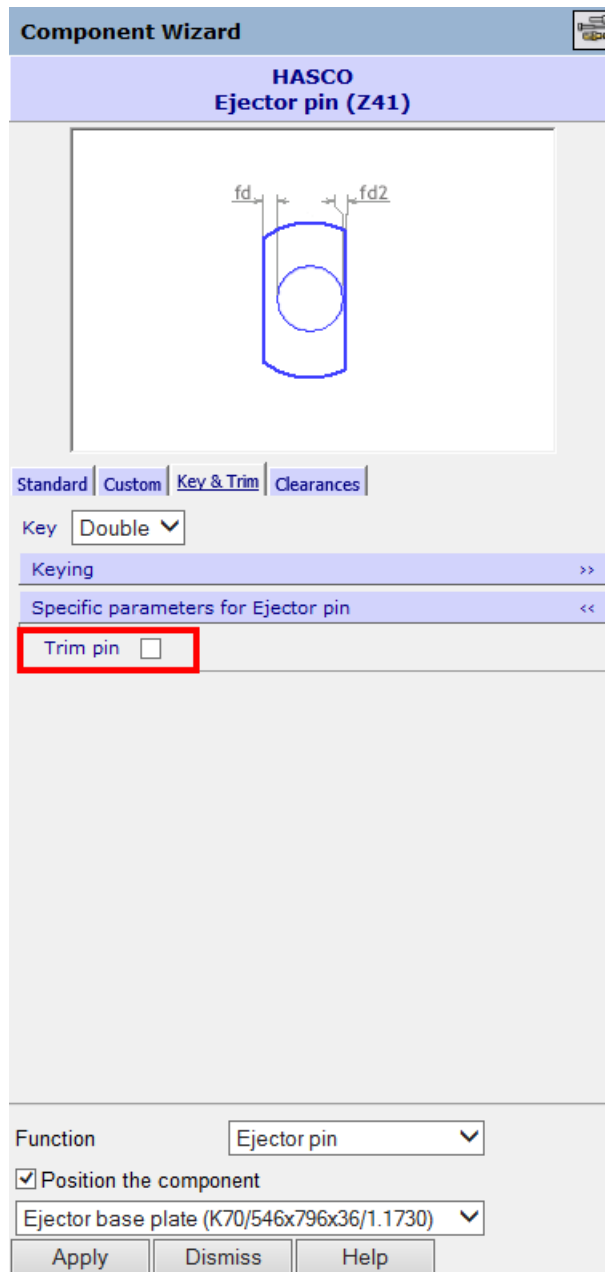
A second pin is created on the model.



*These pins were created with the **Automatic Trim** option turned **ON**. So, when you **Dismiss** the form they are automatically trimmed to the model.*

17 Click **Dismiss**.

18 Select the **Trim Pin** option to deselect it.

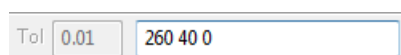


When the pin is created this time it will not be trimmed to the model.

19 Click **Apply**.

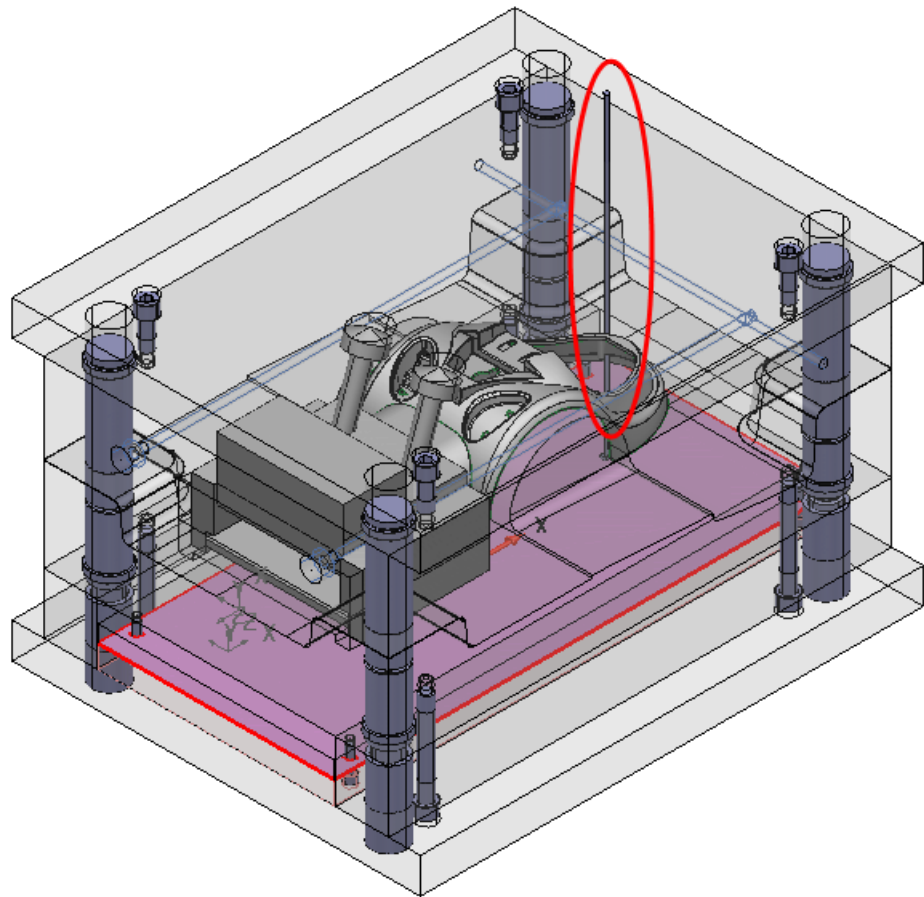
20 Click in the **Command Input** box in the **Status Bar** and type:

260 40 0



21 Press **Enter**.

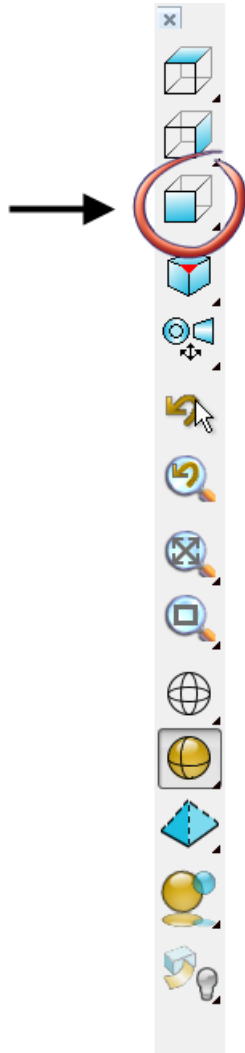
A pin is created on the model.



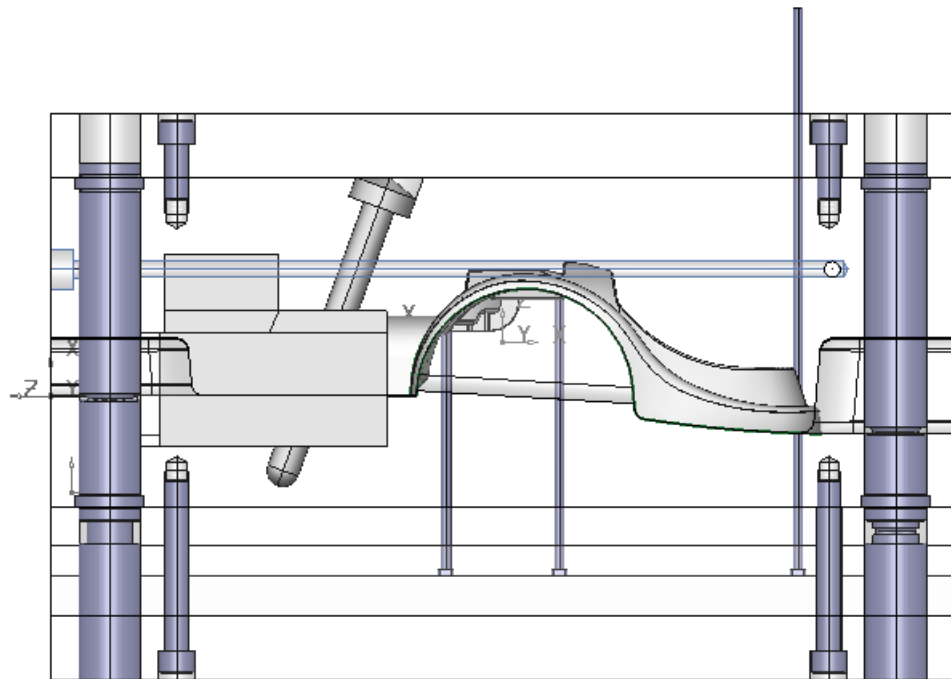
22 Click **Dismiss**.

23 Click **Dismiss**.

24 Click **View from Front** .

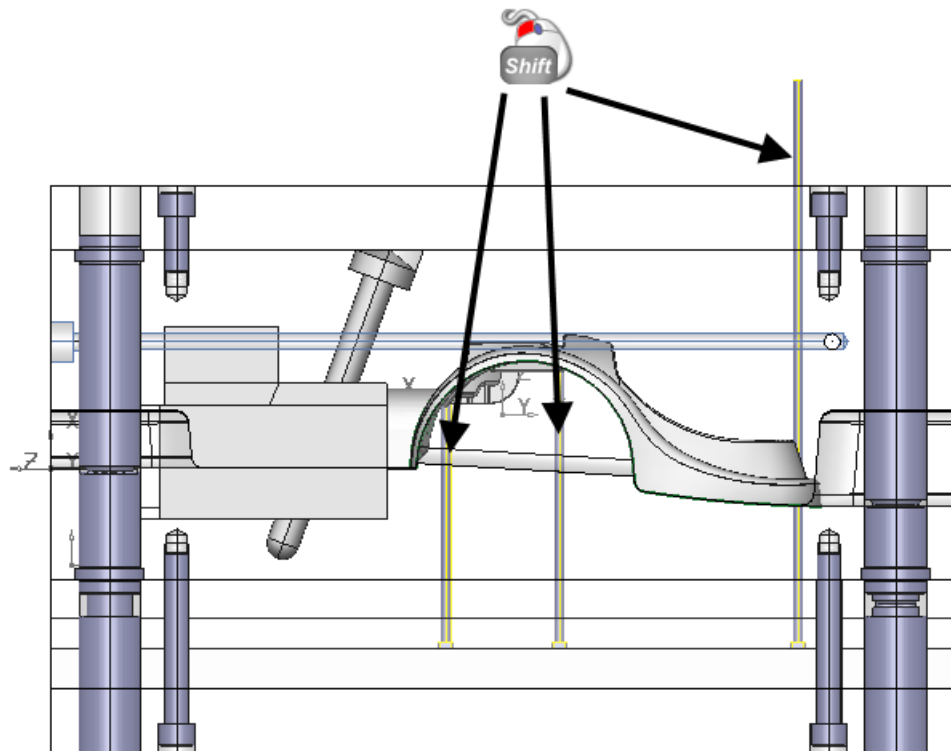


Your model should look like the one shown below:



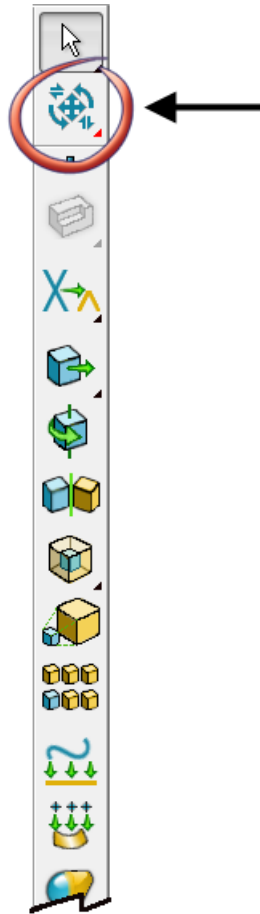
The two trimmed pins and one untrimmed pin can now be seen.

- 25 Click each pin with the left mouse button whilst holding down the Shift key to select them.

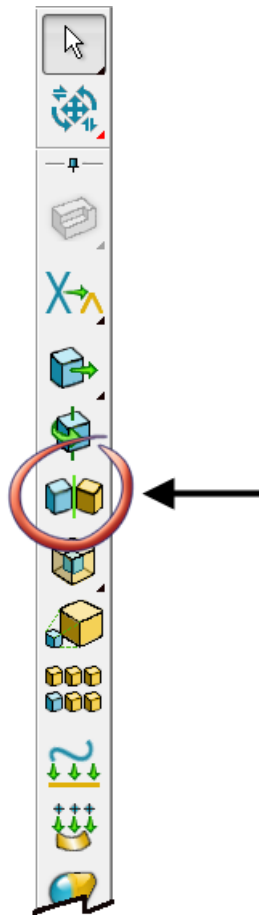


- 26 Click **Show General Edits Options** .

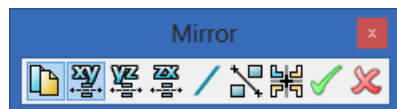
 Keep clicking the button until the toolbar shown below is displayed.



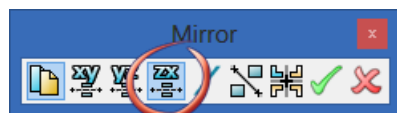
27 Click **Mirror/symmetrise object** .



The **Mirror** toolbar is displayed.



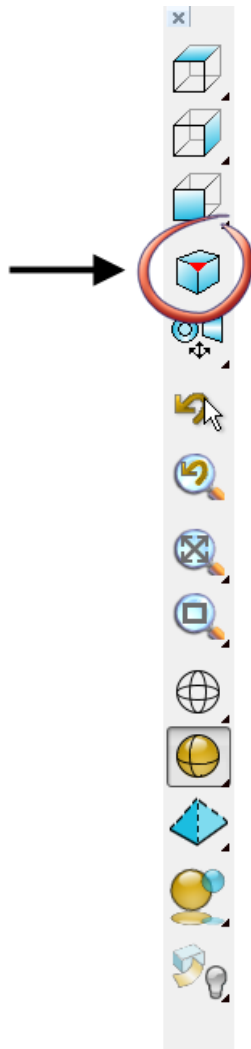
28 Click **Mirror in ZX** .



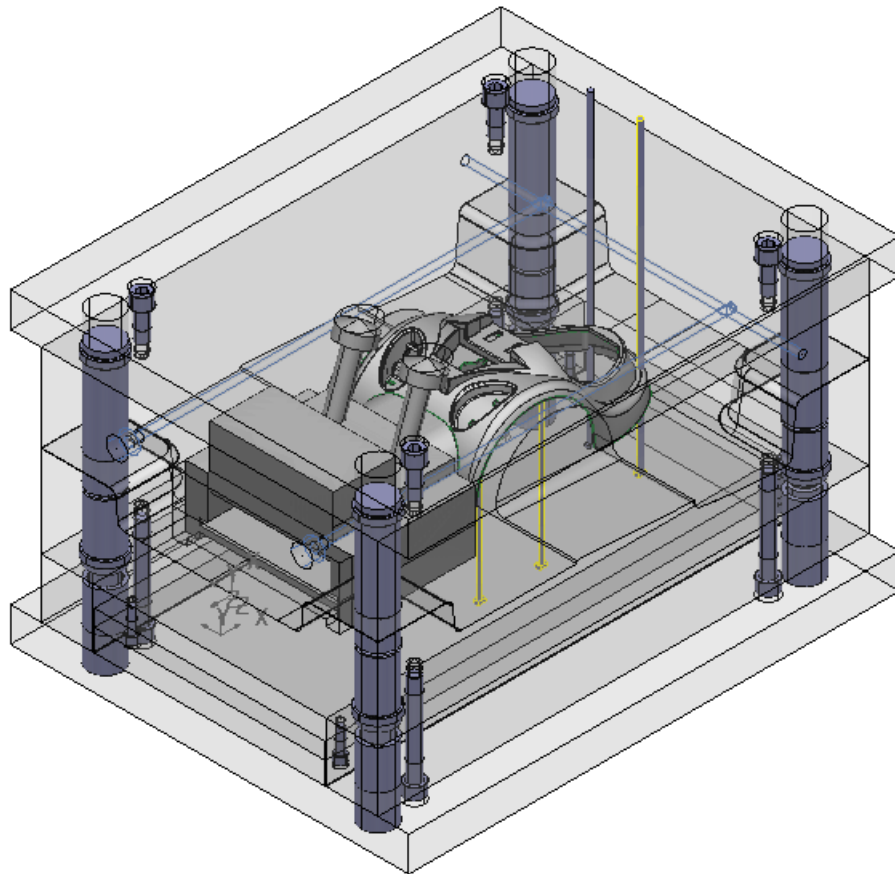
29 Click **Apply** .

30 Click **Select** .

31 Click **View ISO1** .



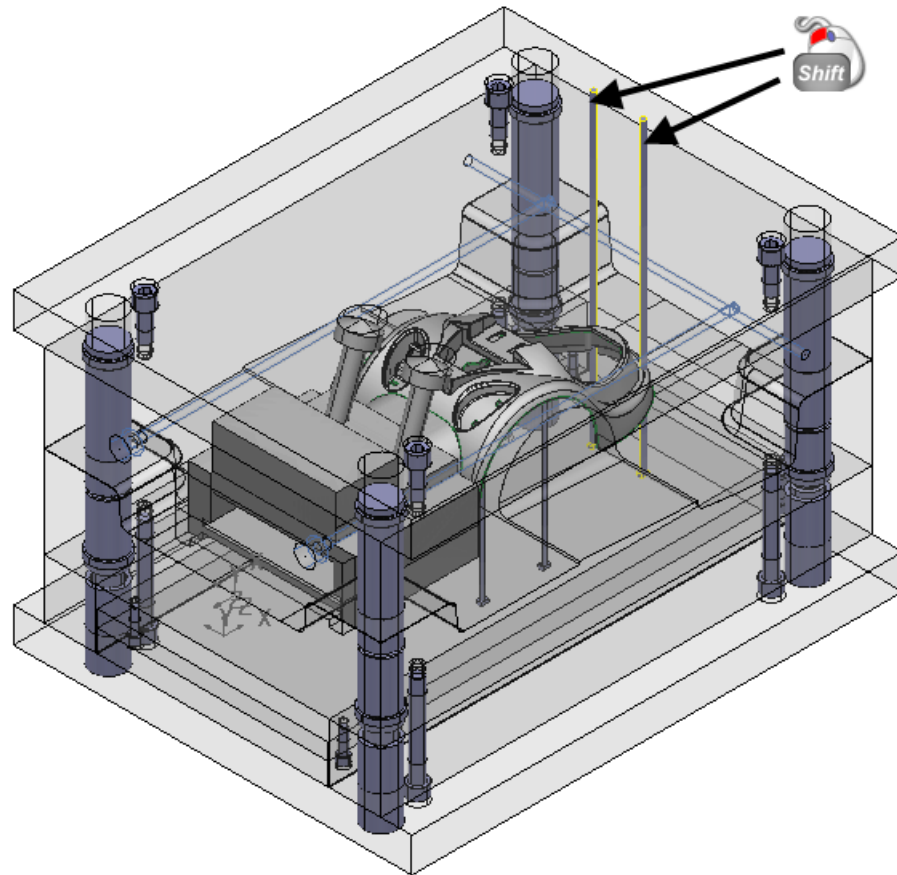
Your model should look like the one shown below:



This has mirrored the set of pins.

32 Click anywhere in the graphics window to deselect the model.

- 33** Hold down the **Shift** key and click the two untrimmed pins using the left mouse button, shown in the image below.

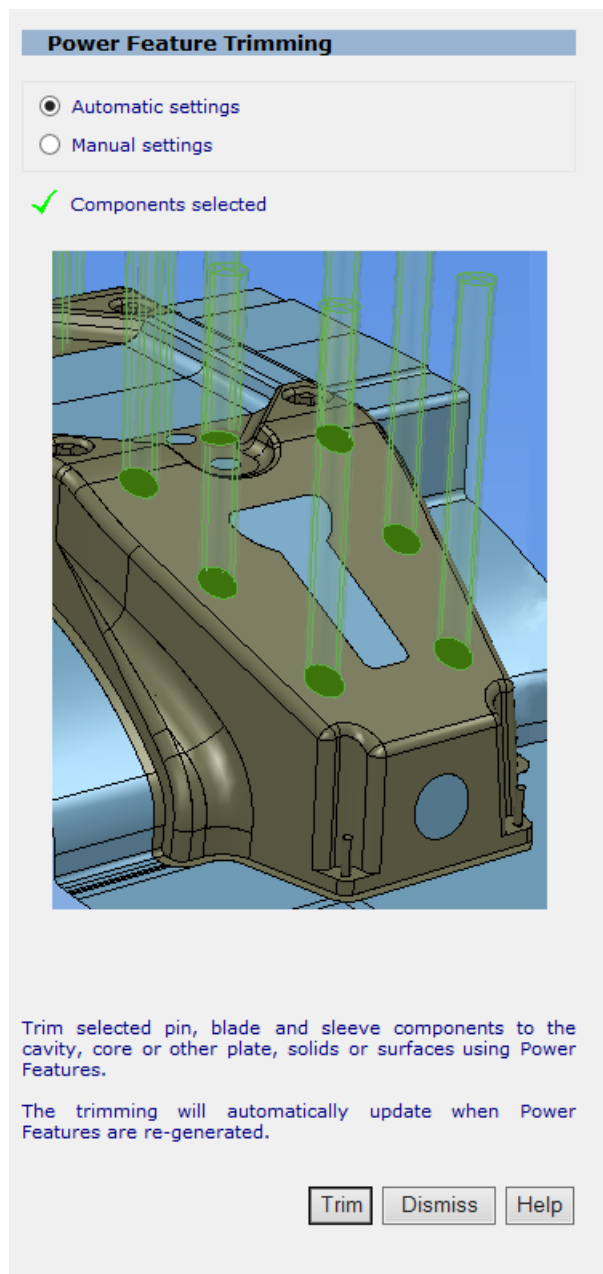


- 34** Click **Wizards** .

35 Click **Power Feature Trimming** .

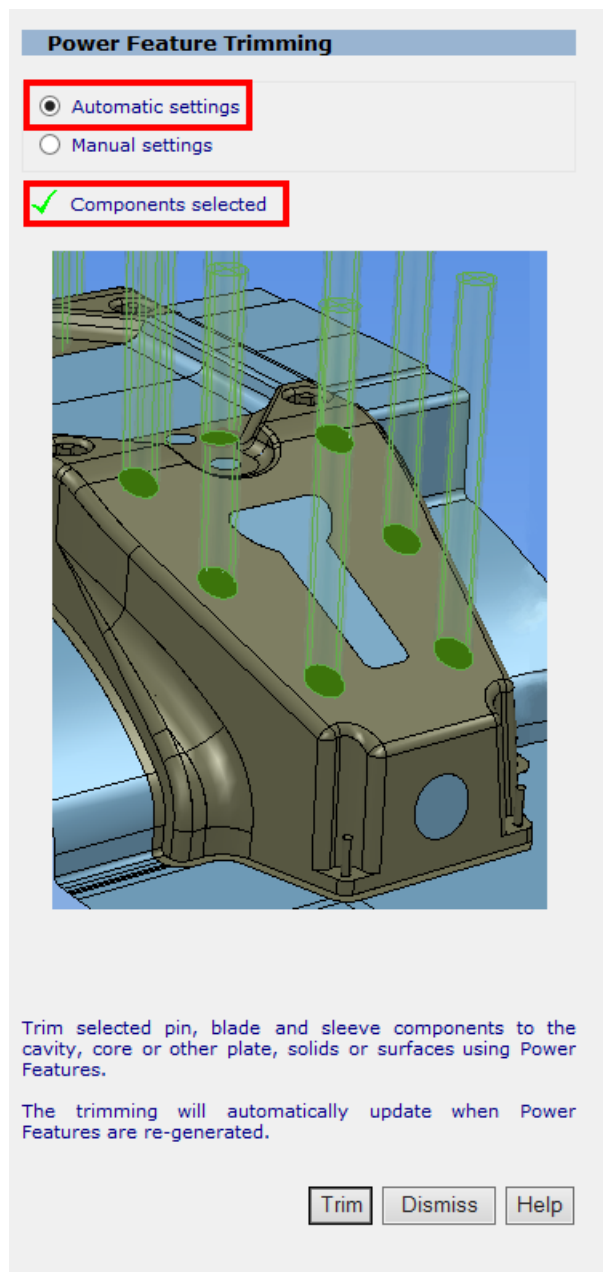


The Wizard starts.



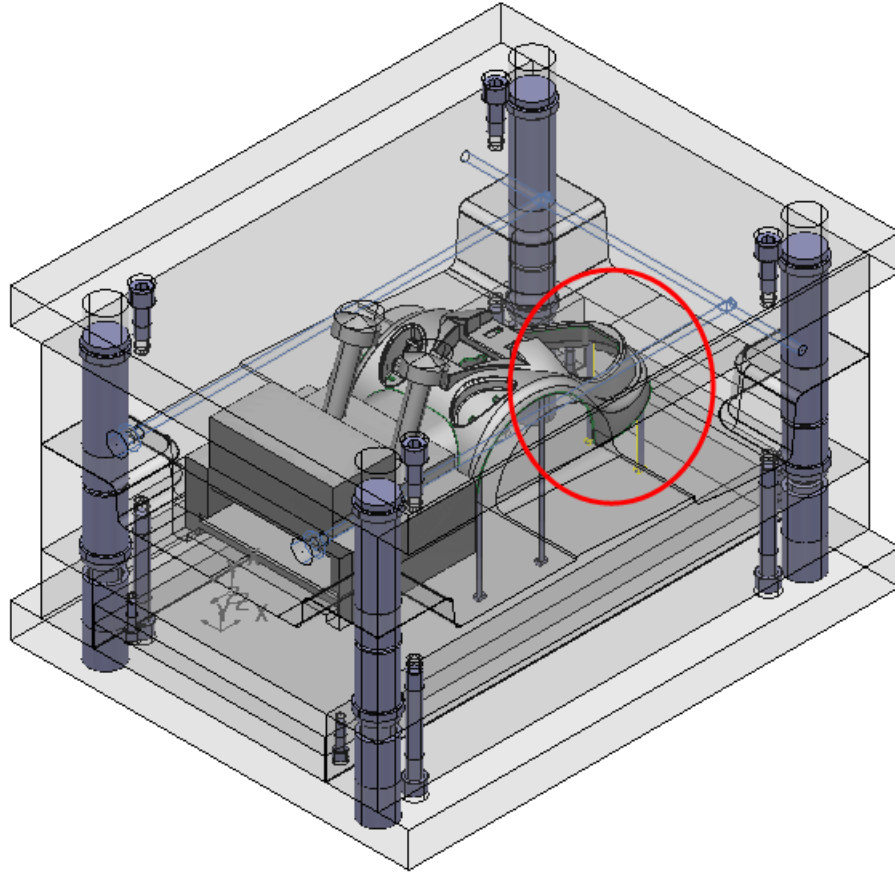
Automatic settings is selected.

A tick is displayed to show components are selected.



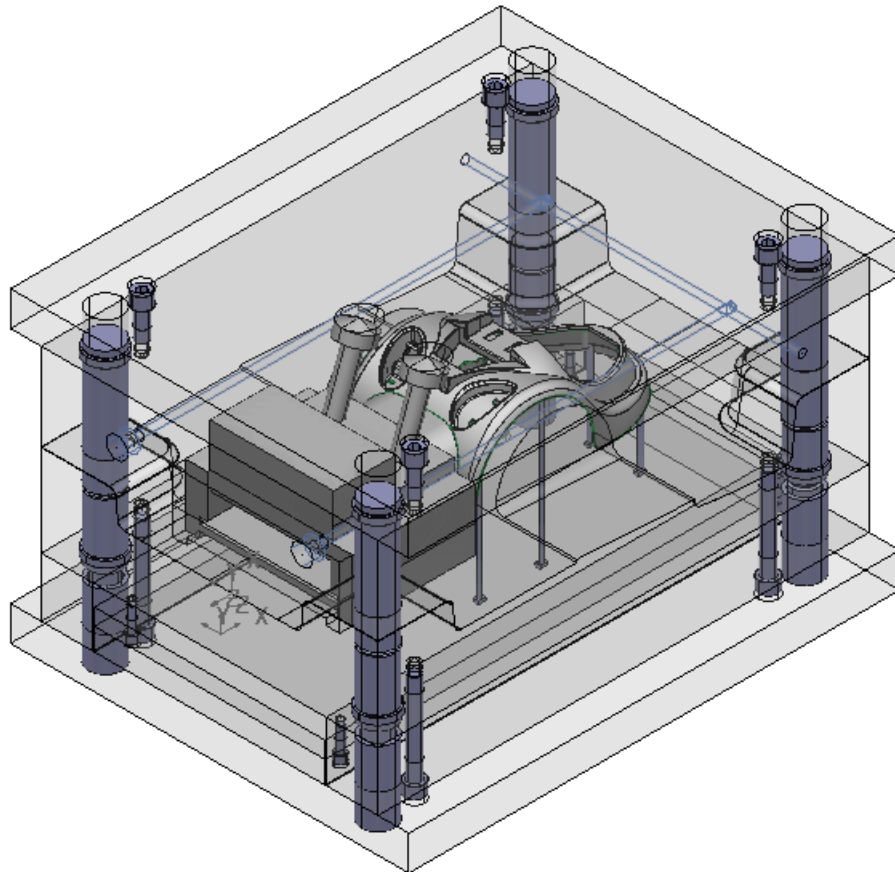
36 Click **Trim**.

37 Click **Dismiss**.



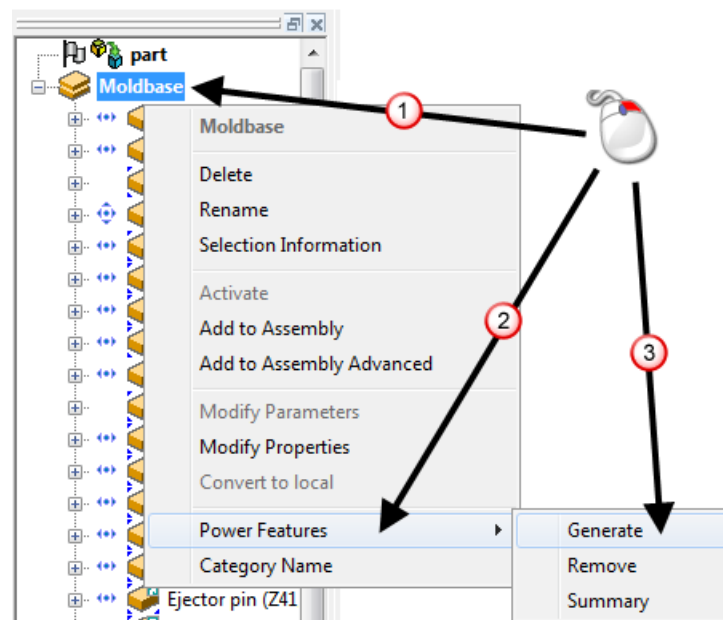
The two pins are now trimmed to the model.

38 Click anywhere in the graphics window to deselect the model.

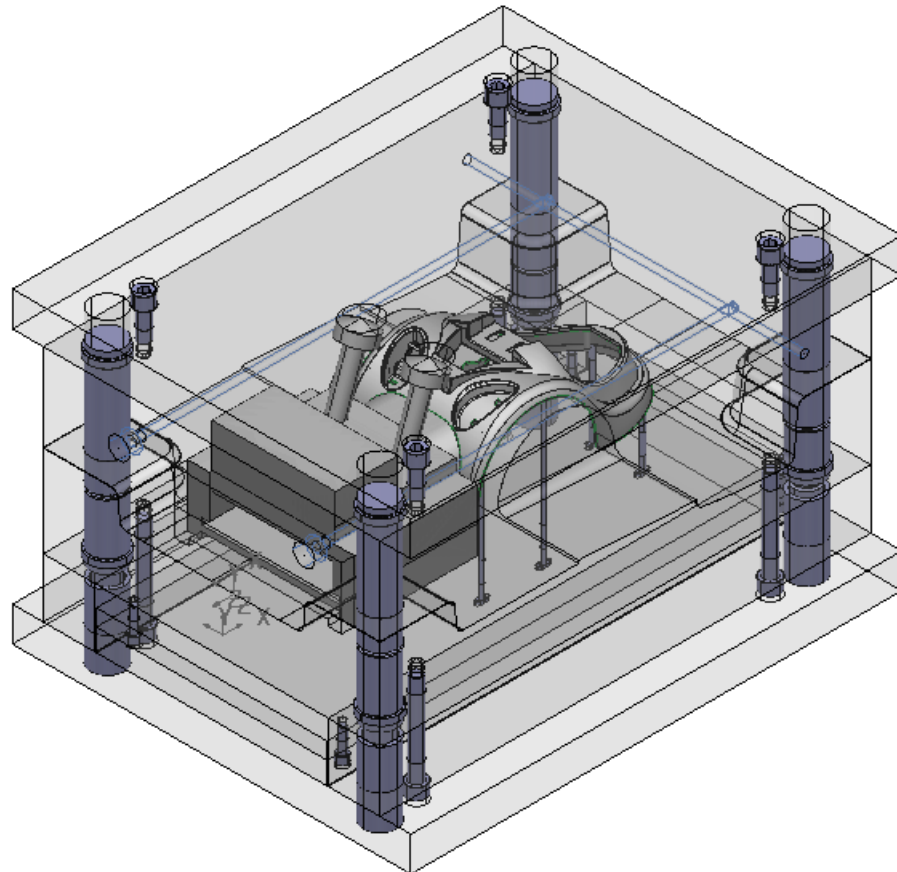


- 39 All six pins are now ready to have their Power features generated. This will create holes through the plates for the pins.
- 40 Do the following:
- ① Click on **Moldbase** in the tree window using the right mouse button.
 - ② Select **Power Features**.

③ Select **Generate**.



The holes have now been created in the plates.



Summary

You have created a mold base ready for production.

You have done the following:

- Split a model using the mold die wizard
- Created a mold base using the cavity core wizard
- Added mold locks to the cavity and core plates
- Added a slide core and mechanism to the undercut region
- Created cooling holes
- Added extra components